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STAR GAME
Reptiles Revenge on QL
See page 10

News Desk

Confusion over QL software

AN announcement by Sinclair's managing director, Nigel Searle, that the four Psion QL software packages will be released in an enhanced form on a plug-in Rom pack seems to have resulted in some confusion.

According to Psion's sales marketing manager Gerry Kelly negotiations between the two companies are still at a preliminary stage, and no agreement has so far been reached.

Yet Nigel Searle publicly stated that the Psion's *Xchange* suite of programs (a much up-graded version of *Quill, Easil, Archive* and *Abacus*) will appear on the QL as a single 128K Rom cartridge option which connects to the expansion port on the QL. Psion's managing director declined to confirm Nigel Searle's claim: "Psion has made no statement about doing the *Xchange* programs on Rom on the QL."

Psion will however release in the Autumn Version 2 of its Microdrive programs for the QL. The upgraded packages will be supplied free to QLub

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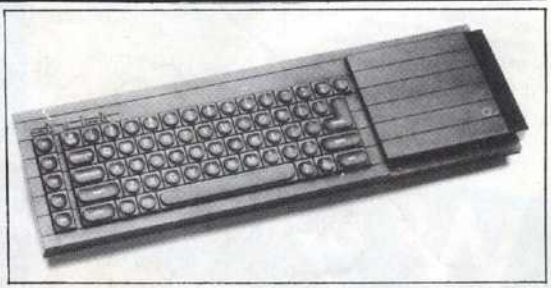

Warner sells off Atari for $240 m

THE surprise sale of Atari to a new company headed by ex-Commodore president Jack Tramiel has now taken place (see *PCW*, July 5). Tramiel's first move after taking over has been to substantially cut the workforce. Several hundred of the 1,000 employees at the company's Sunnyvale headquarters will be laid off this week and Atari's El Paso manufacturing base has been closed with the loss of 300 jobs.

Jack Tramiel

Tramiel who founded Commodore, and turned it from a typewriter importer to a computer company, has set up Tramiel Technology Ltd (TTL). It bought the home computer and video game divisions of Atari, leaving Warner Communications with the coin-operated games section and Ataritel, a new telephone making project. However, it is thought Warner intends to sell these as well.

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This Week

● **Street Life** *Christina Erskine takes a look at the first computerised version of the Doomsday Book on page 12.*

● **Spectrum** *Alan MacDonald begins a five part machine code adventure. See page 20.* ● **Commodore 64** *Disassemble your 64 with Lee Tanner on page 31.* ● **New Releases** Match Point *from Psion and* Alice in Videoland *from Audiogenic are among the selections which begin on page 48.*

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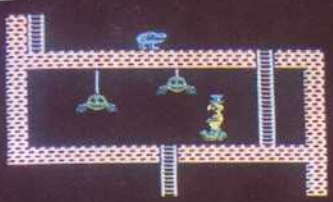

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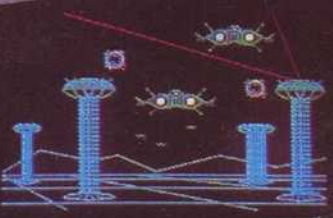

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Accuracy
Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

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Editorial

So, who's going to buy this machine from Commodore, the Plus/4?

At first glance it looks attractive, a 64K machine with built-in word processing, spreadsheet, graphics and database software all for a little under £250.

But the machine also falls rather badly between two stools. Its four software programs are, at best, primitive — a tenth of the size of the four equivalent programs on the QL. So the Plus/4's Rom software will quickly prove inadequate for all but the simplest applications.

If the cost of a QL at £400 is too much then why not buy a Commodore 64? While the Plus/4 has the advantage of a better Basic and Ram available (60K compared with 39K), the 64 is two-thirds the price with a huge library of commercial programs already written for it. You can buy a top-flight word processor program — *Paperclip*, or the less expensive *Easy Script* — and still have change from £250.

Unlike Sinclair with the Spectrum and the QL, Commodore has got itself into a bit of a hole. In performance terms the Plus/4 is not a great advance on the 64. Certainly it is nothing like the jump from the Vic20 to the 64.

This will make life rather difficult for Commodore. It must promote the two similar machines in very different ways — the Commodore 64 will become the 'games' machine and the Plus/4 will be for 'serious' use (hence the four rather trivial built-in programs).

But it won't be that easy. The 64 is quite capable of serious application and unless Commodore is very careful it may find that the 64 continues to sell at the expense of the Plus/4.

Commodore can of course solve the problem by taking deliberate steps to kill off the 64. Are they ready to do that yet, when the 64 is still so successful? I doubt it.

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Atari

continued from page 1

TTL paid $240m (£178m) in total for the Atari computer and video game divisions, and also aquired warrants giving it the option of buying one million Warner common shares.

The sale of Atari to Tramiel was unexpected. It was known that Warner had been looking for a buyer for the last year, but the Dutch-based company Phillips were thought to be main contenders.

The future of Atari projects such as its up-market $1,000 home computer and the video games designed by Lucasfilms is now unclear.

Atari's rise and fall in the computer market was meteoric. Warner bought the company for $27m, and saw Atari's sales rising to $2bn in 1982. But in 1983, sales almost halved and Atari suffered a loss of $538.6m.

Last September James Morgan was bought in from Pepsi by Warner as chairman. He set a target of profitability for Atari by the fourth quarter of 1984, and scrapped many Atari projects, which did not look to be immediately profitable. He also cut staff by 1000 in order to reduce overheads.

Morgan, however, has left the company since the TTL sale went through.

Tramiel's strategy at Atari will be to concentrate on the low cost computer market — thus bringing it directly into competition with Commodore.

QL software

continued from page 1

members. Explained David Potter, "We are not satisfied with the speed of *Quill*, for instance, since the QL doesn't have a dedicated video chip to speed up the process of printing to the screen. Version 2 cures the problem." Another new feature of Version 2 is 3D bars on the *Easil* program.

Sinclair has announced the names of eleven software companies producing material for the QL. They are: Digital Research, Sagesoft, MicroApl, Scicon, Quicksilva, Lattice, Metacomco, Caxton, Psion, GST and Intelligent.

Digital is expected to produce a range of languages for the QL. Sagesoft is converting its accounting suite. Intelligent will produce a chess program. Sinclair is working on a number of peripherals for the QL, the first of which will be a 128K Ram board.

This will be followed bu a 512K Ram board, Winchester disc interface, combined Modem (from Prism) and terminal emmulator, monitor, printer IEEE interface and combined Centronics and Unix hard disc expansion unit. Sinclair is currently negotiating for the Unix operating system to be put onto the QL.

The QL manual is to be substantially revised and existing manuals will be upgraded in August.

Imagine hits more trouble

IMAGINE, the troubled Liverpool software house, was still holding its head above water last week, although over two thirds of the staff have been laid off.

On Monday, July 2 a court ruling gave the company seven days to pay a £10,000 debt to VNU Business Publications. To raise the money Imagine last week sold 110,000 tapes from stock at 30 pence each to a German wholesaler. So far Imagine's creditors have twice called in bailiffs to the company's Liverpool offices, and Merseyside police are also "monitoring" Imagine's affairs, regarding non-payment to its creditors. The police spokesman stressed that no investigation into Imagine's affairs has yet been started.

Tandy withdraws from Dragon talks

TANDY has dropped out of negotiations to acquire in part the assets of the failed Welsh micro manufacturer Dragon Data.

The company had hoped, said managing director John Sayers, to have acquired the Dragon name and finished goods stock in order to provide support for existing users.

However, Tandy has now decided that there is no possibility of restoring profits to the Kenfig assembly plant and, having failed to reach an agreement with the receivers Touche Ross, has pulled out.

This leaves only one company — GEC — still in the bidding for Dragon Data. A GEC spokesman declined to comment on the situation but it is widely expected that GEC will now continue to market the Dragon machines, with the Dragon 32 dropping in price.

Its launch of the Dragon MSX machine at the *Personal Computer World* Show in the Autumn now seems likely to be delayed until early 1985, because of component shortages. John Hiley, GEC's marketing support manager, said, "I am not aware of any problems surrounding an MSX machine, but then GEC has not made any public statement regarding MSX at all."

Full of Eastern promise

MELBOURNE House is producing a joystick-controlled adventure for the Commodore 64 called *Zim Salabim*.

The game's format is reminiscent of Sierra's 128K Apple adventure *King's Quest*. While you control the main character around the screen with the joystick, text input is also required to make the character perform actions, such as eating and drinking. The action of the game is based on Arabian Nights' tales.

Zim Salabim will cost £8.95 and should be released at the end of September.

Fast action against piracy

A NEW group has been set up by representatives from all sides of the computer industry to press for action against software piracy.

FAST (Federation Against Software Theft) specifically aims to lobby parliament in an attempt to get the 1956 Copyright Act updated so that it expressely includes computer software as protected material.

Donald Maclean, chairman of FAST

Donald Maclean, deputy chairman of Thorn-Emi Video Ltd, and chairman of FAST, said, "It looks like there will be no time in this parliament of the next to pass a bill amending the Act, so we went to do it through a private members bill."

Nicholas Lyall, MP for mid-Bedforshire, has pledged his support for FAST and will be presenting a bill to parliament under the ten-minute rule on July 24. Under this hearing, the matter can be aired, and can pave the way for a private members bill.

Running total

SINCLAIR is again sponsoring the Cambridge Festival half-marathon on July 15.

Among this year's entrants are Olympic runner Joyce Smith, last year's men's winner Bob Treadwell, Sir Clive Sinclair himself, and an entrant from the Falkland Islands. The total number of runners will be a record 2,500.

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Letters

Micro dilemma

I was interested to read AJ Pimperton's criticism and comments on my article on Psion's *Quill* package and his remarks on a letter in the same issue. I think his comments that I compared the software business with business software rather than home micro software encapsulates a dilemma that the home micro industry will be faced with in the forthcoming year.

The breed of machines that are appearing — the MSX machines, the Advance, the QL and many more to come are no longer just games machines; they are capable of serious use, and compare favourably with existing single-user business systems.

Sinclair Research has clearly aimed the QL at the serious user, otherwise it would perhaps have included joysticks and free games software as part of the package. This means that the small retailer, to take an example of a potential user, wanting to computerise his business is looking at the QL in comparison with the likes of Apple's MacIntosh, Act's Apricot, and the Osbourne, and its bundled software. So the QL's software will be compared with such packages as *Wordstar, Supercalc, Multiplan* and *dBase*.

Packages such as *Tasword* and *Telewriter* have made the serious use of the home micro affordable, and I am an enthusiastic user of *Tasword* and have written three books using it. However, it would have been unfair to have compared it with *Quill* bearing in mind the QL's additional memory and superior keyboard. The home micro is now in a different league, which will make the selling of them all the more a specialist job.

Malcolm Davison
Burgess Hill
West Sussex

Reply to QL comments

I would like to reply to A Cunningham's letter (PCW, 7 June) with reference to his comments on the QL.

1) Superbasic is designed so that a user can advance from simple programs to more complex ones without the need for learning another language. The basic itself is fairly standard with a lot of extra features such as procedures.

2) Yes, I agree — poor show from Sinclair; still he is getting better.

3)I would rather have microdrives than a cassette port, although Sony mini discs would be even better.

4) If you prefer CP/M and Wordstar then I suggest you go and find an out of date machine like the Apple, pay about £1,000 for it and then wish you had something more flexible and powerful.

Finally, a comment about MSX. Now is not the time so try and standardise things. The market has changed radically in the last two years and it is sure to continue like this for a while. Two years ago, a 16K colour computer was rare, now you can buy a 128K colour computer for a similar price. How can a system like MSX expect to take full advantage of computers which are likely to be available in the near future.

Gary Watson
Plessey Defence Systems
Christchurch

Games release

I have had a CBM64 now for about four months and, quite honestly, I am fed up.

Not with my computer by any means, I still think it is the best machine in my price range. But it aggravates me the way games are always released on the Spectrum months before companies bother to produce them for the CBM64. Some software houses are good at making different versions available — especially Ocean. But I have still to see games like *Atic Atac* and *Jetset Willy* appear on the 64 even though, with the CBM64's superior graphics and sound, I dare say they could make a better job of the games!

Justin Kerswell
50 Oakfields
Broad Acres
Guildford

"We're waiting to see Sir Clive but there seems to be some delay."

A poor education

Graham Stock probably does not realise what he is arguing in his letter excusing "home piracy." Since when has it been all right to steal as long as (a) you claim you can't afford the thing, and (b) you can get away with it? Mr Stock should remember that the authors and publishers of good programs put in a great many hours of work to provide us with first-class material and spend a lot of money getting it to us. Many of the pirates are still at school and to suggest to them that it's all right to enjoy other people's work without paying for it is pretty poor education.

W H Stevenson
11 Johnston Terrace
Edinburgh

Interesting, witty?

Whenever Boris Allan gets his turn on the Ziggurat page, one can guarantee that he will have something interesting, witty, or provocative to say — and Vol 3 No 25 of *PCW* proved no exception. Thank heavens that someone has actually noticed how unsatisfactory reviews can be.

It was therefore with no little amusement that I turned to the New Release of Mosaic's *Width of the World* adventure in the same issue. I knew nothing about the program beforehand — and was almost as ignorant afterwards! We were told that the program was not good enough. Why? Because it has simple verb-noun entry, very simple graphics, and is written in Basic.

Now the curious thing is that one of the reviewer's yardsticks in this matter, along with *The Hobbit* and *Valhalla*, was *Knight's Quest*. Very sensible — *Knight's Quest* is a very fine adventure indeed. But it's a funny thing, you know — *Knight's Quest* has very simple (very slow) graphics, is written in Basic, and accepts only simple commands . . .

What makes *Knight's Quest* a fine program is the ingenuity and complexity of its plot, and the fertile imagination of its author. And in this regard, we, your readers, are no wiser about the really relevant facts concerning Mosaic's program than we were before.

This is the case in 90% of reviews in any magazine, particularly where adventure programs are concerned. Tony Bridge is really the only man worth listening to . . .

A Davis
46 Sycamore Road
Brookhouse
Lancaster

Bug discovery

As well as the bug which Alan Turnbull (*PCW* Vol 3, No 22) found in the ZX Microdrive Rom, I have discovered (to my misfortune) two other bugs.

If you attempt to save a program with less than about 500 bytes remaining (the Microdrive uses upto about 550 as soon as the Interface Rom is plugged in for Load/Save/Verify) the Microdrive will start up and will not save the program (or even stop) until you pull the plug and reset. The problem is caused by the designers of the Rom overlooking the stack. The unit tries to save, even if there is not enough memory to do so.

The second bug is that if you try to erase a filename which does not exist, it will start up for about a minute and then report with 0 OK, 0:1. There also appears to be an oddity when you try to save a program with ten Line 0 Rem statements in. It will spend about 15 seconds filling up the cartridge with rubbish and report with a 'Microdrive Full' error!

N Foster
Hinckley

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PCW 12/7

Reptile's revenge

A version of the popular *Snake* game written by Ian Logan for the QL

The following listings quite nicely illustrate both the power of *Superbasic* and a few of its limitations. Of particular usefulness are:

— the ability to define Windows and to print into them.
— the definition of procedures.
— the *Repeat/End Repeat* structure.
— *the For/End For* structure.
— the *If, Then, Else, End If* structure.
— the ability to reserve memory using *Respr*.

whereas one does miss:

— the inability to define graphic characters with any ease.
— the presence of only the single sound 'voice' (but the extended *Beep* command helps a little).

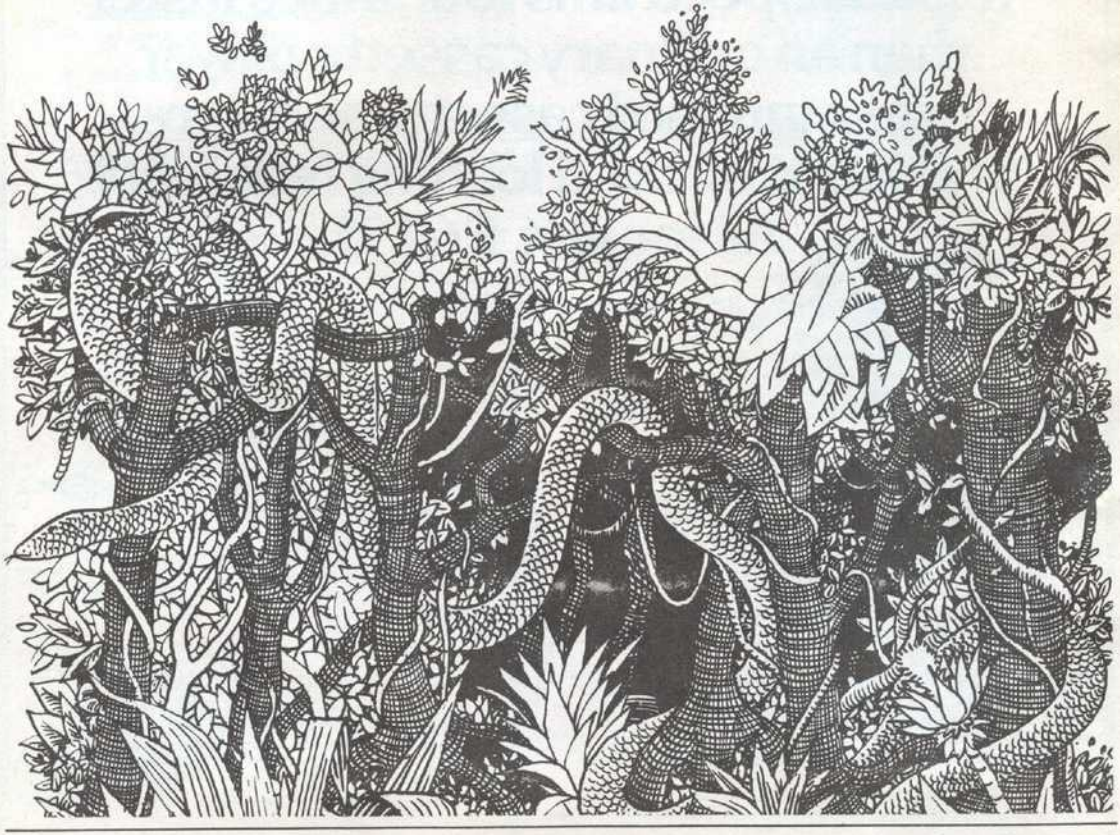
Program Notes

The program has been written without the benefit of instructive *Remark* statements, so the following notes may be helpful.

Line 120 *Mode 8* allows the use of green, yellow, magenta and cyan.
Line 120–130 output windows for streams 3 & 4 are defined.
Line 150–190 the main loop of the program; if the 'playing' ends then 'start' again.
Line 210–390 prepare the initial display. The playing area has a height, *h*, of 16 characters and a width, *w*, of 33 characters.
Line 440–470 the score *sc*, is set to zero; the play-on flag, *f*, is cleared; the number of targets, *n*, is set to 100.
Line 480–560 The positions for the targets are selected at random. The appropriate locations in the reserved memory are marked in use, *l*, and the targets are displayed.
Line 570–630 A snake of size one segment is created at Line 8 and Row 16. This position is stored in a position string, P.
Line 660–1000 The snake moving procedure. The various steps are 1) return if the *s* key is being pressed. 2) Alter the direction parameters (*lc, rc* and *d*) depending on which cursor key is being pressed. 3) Return if the snake has reached the edge of the playing area. 4) Print-over the head of the snake with either a space character or a 'crosshatch' character depending on whether the snake has one or more segments. 5) Find the value, *v*, of the location where the head of the snake is now. 6) If the location is 'free' (*v*=0) then 'shorten' the snake. 7) If the target has been hit then add 1 to the score and make a 'beep' (really a 'munch').
Line 1020–1090 The procedure *Play* is defined. This is the main control procedure and 'playing' continues until the 'play-on' flag, *f*, becomes set.
Line 1110–1260 The procedure *Ended* is defined. Here the suitable messages are selected and the program waits for the user to press either the *Enter* or the *d* keys; if no key is pressed within 20 seconds the demonstration procedure is called.
Line 1280–1320 The controller procedure for the demonstration mode.
Line 1340–1460 The *Demo* procedure is defined. This procedure contains a series of calls to the snake-moving procedure so that the snake 'sweeps' backwards and forwards across the screen until all the 'targets' are hit. Try writing your own *Demo* procedure! It is not too difficult to make it appear that the snake is *intelligent* and much better at getting all the 'targets' than any human player.

Note

On some early machines the *At* command parameters x and y are defined y and x. In this case the parameters b and c, l and r and lf and rf will have to be transposed.



```
100 REMark     QL SNAKE
110 REMark .....................
120 MODE 8
130 OPEN #3,con_448x190a30x16_0
140 OPEN #4,con_448x50a30x206_0
150 REPeat start
160 initial
170 play
180 ended
190 END REPeat start
200 REMark .....................
210 DEFine PROCedure initial
220 WINDOW 512,256,0,0
230 PAPER 4
240 CLS
250 INK #4,0
260 PAPER #4,7
270 CLS #4
280 BORDER #4,10,4
290 CSIZE #4,3,1
300 CURSOR #4,30,3
310 PRINT #4,"QL  SNAKE":
320 CSIZE #4,2,0
330 CURSOR #4,200,8
340 PRINT #4,"Score = 0"
350 INK #3,7
360 PAPER #3,0
370 CLS #3
380 BORDER #3,10,4
390 h=16: w=33
400 q=RESPR(0):IF q>262000 THEN
q=RESPR(700)
410 FOR a=q TO q+700 STEP 4
420 POKE_L a,0
430 END FOR a
440 sc=0
450 f=0
460 PAPER #3,2
470 n=100
480 FOR a=1 TO n
490 REPeat d
500 b=RND(0 TO h): c=RND(0 TO w)
510 IF b>8 AND c=16 THEN NEXT d
520 IF NOT PEEK (q+b*(w+1)+c)
THEN EXIT d
530 END REPeat d
540 POKE q+b*(w+1)+c,1
550 AT #3,b,c: PRINT #3,CHR$(42)
560 END FOR a
570 PAPER #3,0
580 INK #3,6
590 l=8: r=16: lc=1: rc=0: d=191
600 AT #3,l,r: PRINT #3,CHR$(d)
610 POKE q+l*(w+1)+r,2
620 DIM p$(220)
630 p$=CHR$(1)&CHR$(r)
640 END DEFine
650 REMark .....................
660 DEFine PROCedure snake(i)
670 IF KEYROW(3)&&8 THEN f=1: RETurn
680 SELect ON i
690   =2  :IF d<>189 THEN lc=0 :
rc=-1: d=188
700   =16 :IF d<>188 THEN lc=0 : rc=1
: d=189
710   =4  :IF d<>191 THEN lc=-1: rc=0
: d=190
720   =128:IF d<>190 THEN lc=1 : rc=0
: d=191
730 END SELect
740 lf=l: rf=r: p=LEN(p$)
750 l=l+lc: r=r+rc
760 IF l>h OR r>w OR l<0 OR r<0 THEN
770   f=1: AT #3,lf,rf: PRINT #3,CHR$(d)
: RETurn
780 END IF
790 IF p=2 THEN
800   AT #3,lf,rf: PRINT #3,CHR$(32)
810 ELSE
820   AT #3,lf,rf: PRINT #3,CHR$(192)
830 END IF
840 AT #3,l,r: PRINT #3,CHR$(d)
850 v=PEEK(q+l*(w+1)+r)
860 POKE q+l*(w+1)+r,2
870 p$=p$&CHR$(l)&CHR$(r)
880 SELect ON v
890   =0:la=CODE(p$(1))

900       ra=CODE(p$(2))
910       AT #3,la,ra: PRINT #3,CHR$(32)
920       POKE q+la*(w+1)+ra,0
930       p$=p$(3 TO LEN(p$))
940   =1:sc=sc+1
950       BEEP 1000,10,40,100,10
960       CURSOR #4,296,8: PRINT #4,sc
970       IF sc=n THEN f=1
980   =2:f=1
990 END SELect
1000 END DEFine
1010 REMark .....................
1020 DEFine PROCedure play
1030 CURSOR #4,0,20
1040 PRINT #4,"Playing - use cursor
keys (S=stop)"
1050 REPeat q
1060 i=KEYROW(1)
1070 snake i: IF f THEN EXIT q
1080 END REPeat q
1090 END DEFine
1100 REMark .....................
1110 DEFine PROCedure ended
1120 CURSOR #4,0,20
1130 FLASH #4,1
1140 IF sc=n THEN
1150   PRINT#4,"Success  - ";
1160 ELSE
1170   PRINT #4,"Finished - ";
1180 END IF
1190 PRINT #4,"ENTER (play) - D (demo)"
1200 FLASH #4,0
1210 REPeat s
1220 k=CODE(INKEY$(1000))
1230 IF k=0 OR k=68 OR k=100 THEN
democontroller
1240 IF k=10 THEN CLS #3: CLS #4:
RETurn
1250 END REPeat s
1260 END DEFine
1270 REMark .....................
1280 DEFine PROCedure democontroller
1290 initial
1300 demo
1310 ended
1320 END DEFine
1330 REMark .....................
1340 DEFine PROCedure demo
1350 CURSOR #4,0,20
1360 PRINT #4," Demonstration -
press S to stop"
1370 FOR e=9 TO 10: snake 128: IF f
THEN RETurn
1380 FOR e=17 TO 33: snake 16: IF f
THEN RETurn
1390 FOR e=11 TO 16: snake 128: IF f
THEN RETurn
1400 FOR ee=1 TO 9
1410 FOR e=33 TO 1 STEP -1: snake 2:
IF f THEN RETurn
1420 snake 4: IF f THEN RETurn
1430 FOR e=1 TO 33: snake 16: IF f
THEN RETurn
1440 snake 4: IF f THEN RETurn
1450 END FOR ee
1460 END DEFine
1470 REMark .....................
```

What the census saw

***Christina Erskine** talks to historian John Palmer who is busy putting the Doomsday Book onto a computer.*

A curious anomaly exists at Hull University. The history students are allocated four times as much memory space on the university's mainframe computer as the computing scientists.

This state of affairs is due entirely to one course offered to final year historians, study of the Doomsday Book, 'the census' of landowners and details of property commisioned by William the Conqueror in 1066, and completed twenty years later.

The text of the Doomsday Book — between two and three million words — takes up 50,000K on the computer, and offers students the chance to study the book in an original way, bringing to light previously undiscovered facts about life in England after the Norman conquest.

The idea of putting the book onto the computer was the brainchild of Dr John Palmer, senior lecturer in History at Hull, who began work on it as a teaching package over five years ago.

"Final year students at Hull all spend half their time studying a special subject. Only original sources may be used, making it very close to pure research," explained John.

"I had to choose an option to add to the list for that course and I was interested in the potential of computers, because I felt there were so many things one could do with a computer that could be well-nigh impossible without.

"The Doomsday book was something of a departure for me — I specialise in Mediaeval history — but it was an obvious are for study at Hull; we actualy have two copies of the version republished in 1783 in the library."

"only original sources may be used . . ."

"I was surprised to find that the Doomsday book had not previously been computerised, and it dawned on me that if the course was going to be offered at all I was going to have to do it myself, even though I knew absolutely nothing about computers at the time."

"Luckily, I managed to interest George Slater, one of the university programmers, in the project, and he took over the technical side."

The first stage of the project was to type all the text from the volumes on to the computer — a formidable task in itself, and not one that John, with full-time teaching and research committments could undertake himself.

"I found I was ineligible for a research grant, but rather deviously, I managed to obtain four typists from the Government's manpower team."

The typing in stage took about 15 months to complete. The Doomsday book is written in Latin shorthand, using abbreviation symbols which cannot be directly represented on the keyboard, so John had to devise a code to signify these marks.

But the biggest headache was undoubtedly checking for typing errors — spelling was not standardised when the Book was written, and many different versions of the same word can appear in the manuscript.

The next stage was to produce a database package to enable specific information to be retrieved from the text.

". . . a vast amount of reading . . ."

When William the Conquerer commisioned the book, he was primarily interested in the relative wealth of his landowners, rather than a sociological survey of the country. However, by calculating the facts and figures from each section, one can gain an accurate picture of, for example, population, agriculture, social organisation or wealth distribution.

In the book, while each county is treated as a separate section, the county is then sub-divided according to the ownership of the land, rather than by village.

"Each 'manor' that a tenant-in-chief held is mentioned separately," said John. "But a village can consist of more than one manor. In Bedfordshire, for example, there were 377 manors but 143 villages."

"Of course, it is quite possible to study the size and status of each community, but it involves a vast amount of reading and laborious calculations, which my students would neither have the time or patience for. But a database program on the computer can compare and calculate all the statistics in a matter of seconds." If you like, it acts as a very accurate cross-index, and mathematician."

Because of the volume of text, the database programs themselves apply to each county separately.

From working on the database, John could see further potential for the Doomsday project.

"What I would like to do now is to make a computer version of the English translation, and transfer each county separately onto floppy disc. The discs and a sub-set of the applications package could then be sold, hired or lent to schools together with a floppy disc for their particular county."

"So far we have put Bedfordshire onto a 5 inch floppy disc for use with the BBC B and we have been able to use the graphics facility on the BBC to reproduce the original shorthand marks."

"If I can get some kind of a grant for a full-time programmer, there's no reason why all the counties shouldn't be on floppy disc for the BBC and available in the next two years. 1986, curiously enough, will be the Doomsday book's 900th anniversary."

But John is not setting 1986 as a final date to have finished with the Doomsday book and the computer.

. . . something of a cult following

"I've become so interested in it now that I can see myself continuing to research it for many years to come.

"Certainly the biography of Richard II I was planning on writing five years ago seems to have gone to the wall."

In the four years that the Doomsday book option has been available to Hull students as a special course, it has acquired something of a cult following.

"It's certainly something different", agreed John. "As far as I know, we're the only history department that uses a computer for anything other than statistics, and this is, of course, the only computerised version of the Doomsday book."

"I wouldn't say it's a wildly popular option, because it's a stiff course. The students have to write a 10,000 word dissertation on an aspect of the book that preferably hasn't been studied before. But using the computer means that the number of aspects is almost infinite."

"The students on the course frequently get very wrapped up in it — I've heard frustrated tutors in the history department complain of hearing so much from the students about their Doomsday book dissertations. But in the four years that the course has run, there's always been at least one first class degree from someone who chose the Doomsday book as a final year option."

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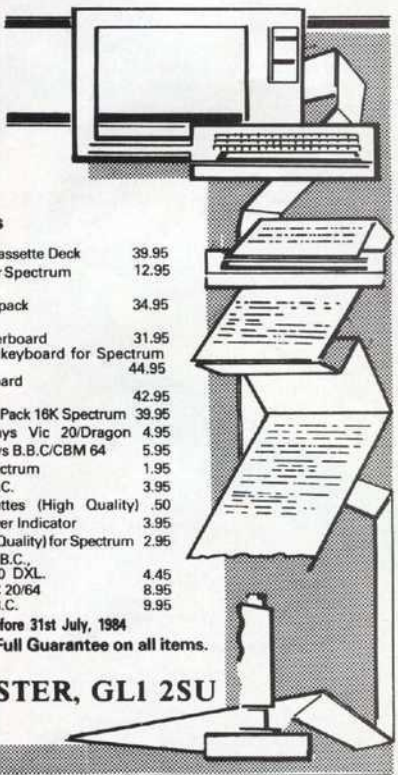

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The Hobbit. Now the best is

"After a very short time I found that 'The Hobbit' was becoming almost a way of life rather than a game, and so when I finished it for the first time I was partly sad because I felt that all the fun and adventure had ended, but I was wrong. Even now I am discovering new things about the game and feel that it will be some time until all of its secrets are revealed to me."

MR. J. STERN, Herts

"I have at last received your 'Hobbit' program and would like to congratulate you on its excellence. After four days of sweat and tears I have completed only 37.5 per cent of the adventure. The program has lived up completely to expectations, and there is no doubt about it being the best production for the Spectrum to date. You have surpassed all others wi[illegible] program."

"A lot of fun."

COMPUTI[illegible]

"The excellent gra[illegible] The exciting differ[illegible] is that it is possibl[illegible] converse with all t[illegible] meet and ask their[illegible] recommend this g[illegible] Tolkien, or novel a[illegible]

POPULAR COMP[illegible]

"I am writing to co[illegible] 'Hobbit'. I think it is one of [illegible] ingenious programs I have [illegible] to use. It has kept me stum[illegible] months. I think the effort th[illegible] has go[illegible] writing a program like this must have be[illegible] enormous. The effects are brilliant to say t[illegible] least."

JEREMY CHESTER

"Th[illegible]bit takes first place in the new [illegible] quality and value for money."

SINCLAIR USER

[illegible]cations in the Adventure are [illegible]he excellent graphics. We [illegible]mplete 7.5 per[illegible] of [illegible]ures. The [illegible]ried plot [illegible]erior to any [illegible] for the [illegible]

COMPUTER

[illegible]isty Mountains [illegible], this game is [illegible]eat to play and is No. 1 for [illegible]nd excitement."

GORDON DEMPTSTER, Scotland

"Thanks again for an excellent game in 'The Hobbit'. I feel I have really got my money's worth out of playing time. Congratulations!"

MR. P. RUSHTON, Leeds

"The most powerful computer game yet invented."

COMPUTER WEEKLY

"Within my circle of friends this game has become something of an obsession. We meet every Friday night at someone's house and spend 3-4 hours on 'The Hobbit'. Friday night would not be the same without 'The Hobbit'."

CHRISTINE VERCHILD, Wilts

"One new Adventure game stands head and shoulders above the rest. It alone almost provides you with a good enough reason to buy a 48K Sinclair Spectrum. Not only does The Hobbit produce drawings of the main scenes, but it also understands proper sentences rather than pairs of words for its commands. It comes with a copy of J.R.R. Tolkien's classic book of the same name. It is the program with the most detailed and best written documentation ever."

WHAT MICRO

"This is an impressively packaged Adventure game which makes good use of the Spectrum's colour graphics. They have not only produced one of the best games for the Spectrum, but given everyone else a lesson in good game design."

PRACTICAL COM[illegible]

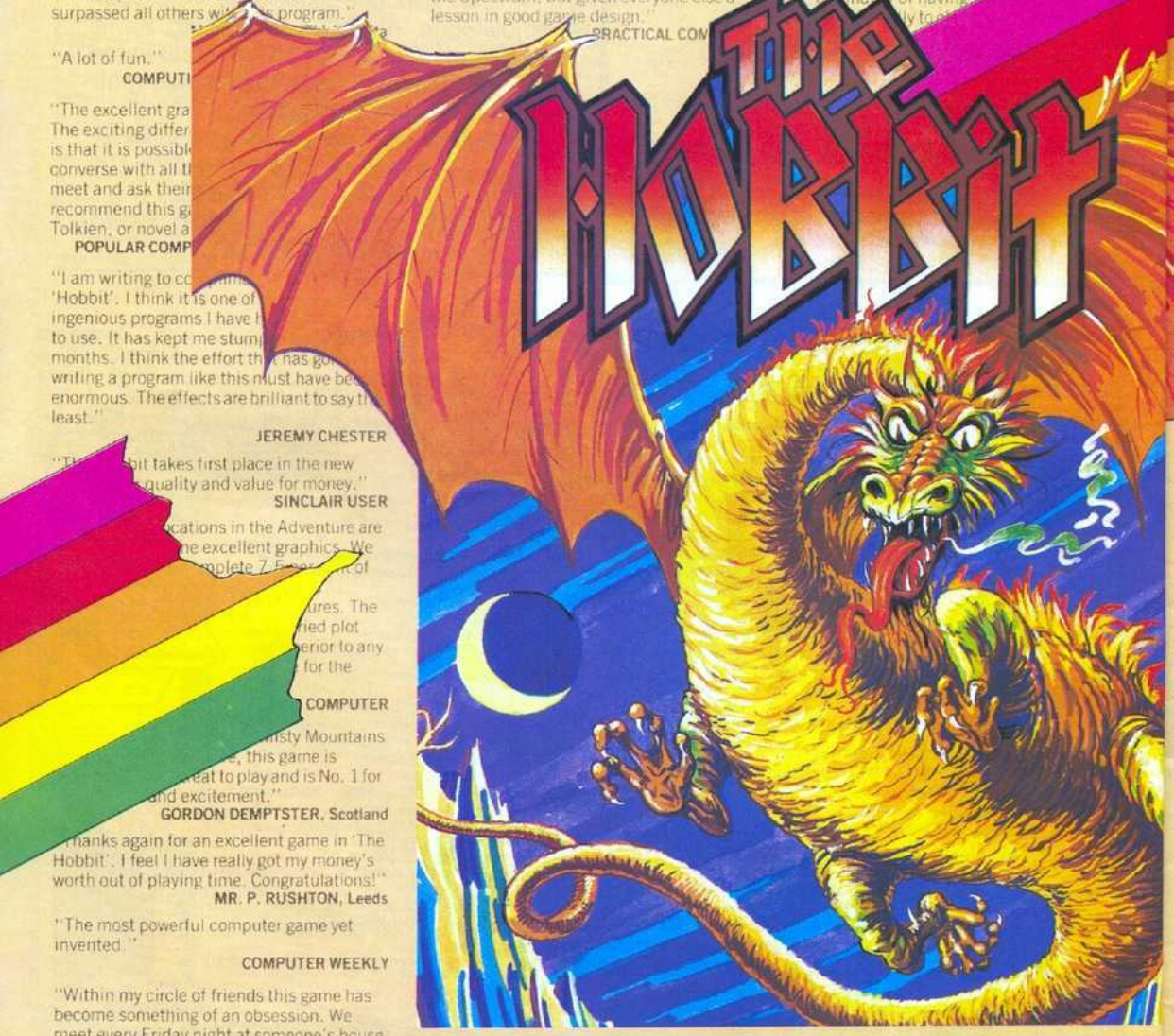
"I am the owner of a copy of 'The Hobbit' which is wonderful entertainment, and very challenging. I have other tapes and publications of yours, all of which are excellent."

MR. D.J. BURGH, Kent

"Having received the most excellent piece of programming I have ever seen, we have had no social life whatsoever. 'The Hobbit' has been dominating our lives since January and many nights have been spent until 3 o'clock trying to conquer it."

SIMON ROGERS, Avon

"I have recently purchased your excellent adventure game 'The Hobbit'. This [illegible] greatly enhanced by the use of [illegible] graphics, its availability in [illegible] originality of having [illegible] ly to [illegible]



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...tulate you on a ... I have enjoyed ...renslely. I must thank you ...ducing such a clever product, it ...was worth every penny of the purchase price."
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...d for my ZX ... you supply called ...n excellent ...the money. I find ...ery realistic. The ...accurate. It sticks ...e book, which is a ...it very compelling ...
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...ing recently purchased a Sinclair Spectrum I decided to buy 'The Hobbit' since I have been doing a literature project based on 'The Hobbit' with my class of 10 and 11 year old children. Over the last 10 weeks the children, having read the book, have been attempting the program with my assistance. Let me congratulate you on a most entertaining program."
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All versions of 'The Hobbit' are identical with regard to the adventure program. Du... to memory limitations, BBC cassette version does not include graphics.

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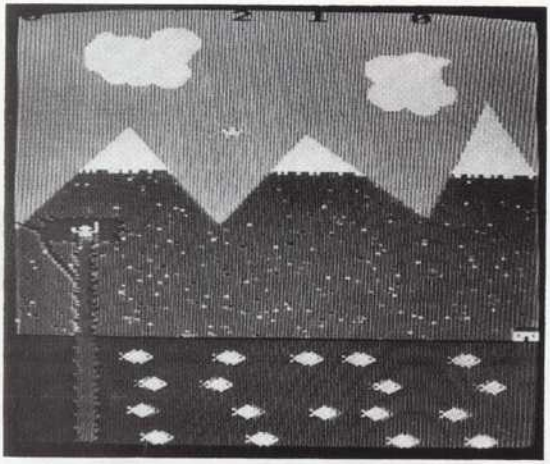
Bigger and hungrier

Program Ossie **Micro** BBC B Price £6.95 **Supplier** Peaksoft, 7 Hawthorn Crescent, Burton-on-Trent.

After peculiar penguins and unlikely invading firebirds here comes Peaksoft with *Ossie*, based on the natural problems an Osprey has keeping its chicks fed and fighting off poachers.

The program draws a lake in



the mountains with a nest on a lone tree. The bird you control has to dive into the lake to catch fish for its chicks. Every now and then it has to swoop on poachers and drive them off. There's no relaxation — it has to feed the chicks within a strict time-limit. With each new sheet the chicks grow bigger and hungrier and time is shorter. Diving into the lake is a tricky business of co-ordination to catch a fish rather than just get wet.

The graphics are good but Ossie does not stand out very clearly (perhaps a deliberate tribute to its natural camouflage). The splash is a realistic sound effect and comes with enough of a delay after each dive to persuade you that you're a thoughtful naturalist watching from a rocky crag some distance away.

Dave Watterson

A rare gem

Program *The Storyline* **Micro** BBC B **Price** £7.95 **Supplier** Daco Software, 59 Mackenzie Road, Moseley, Birmingham B11 4EP.

Here's a happy exception to the rule that educational programs often become useless at home without a skilled teacher to oversee their use.

With *The Storyline* children aged between 5 and 12 can write short stories of their own in large letters on screen and print them out to a printer.

The program offers a continuous selection of words and you press a key to choose which to incorporate next into the story. It is simplicity itself to operate and well crash-proofed. The child is gently forced to use adjectives, adverbs and verbs in all the right places. Learning new words involves first recognising them in reading material and then, crucially, being able to use them in your own writing. *The Storyline* is that rare gem, a learning aid which helps the second process.

Parents are encouraged to modify the data lines to introduce new vocabulary — guided by straightforward, brief but detailed and helpful notes. Aunts and uncles should be ready to receive lots of simple but fun stories from excited youngsters who will really enjoy this unusual program.

Simon Wilson

Elementary!

Program *Dr Watson Series — BBC Assembly Language Course* **Price** £12.50 **Micro** BBC B **Supplier** Honeyfold Software Ltd., Standfast House, Bath Place, Barnet, London.

As with any language — French, German, BASIC etc — there's no instant short cut to learning Assembly Language (or Assembler as it's often known). Good teachers, however, do make the task much easier. Tom de Havas and Peter Homes are very good teachers. A couple of years ago the 'Doctor Watson' series of books introduced Assembler tutors for the Pet and the Vic. Now they have revised and rewritten those for the BBC.

What you buy is essentially 156 pages of first-rate lessons backed up by 47 pages of appendices, a glossary, index and a cassette. The lessons are by far the best I've seen. At first they use ordinary decimal numbers, make comparisons with Basic and use very short programs to demonstrate each new concept. As you learn you can see the *purpose* of each command. Right from the start you begin to realise how you could use these instructions for a practical purpose in your own programs.

Very sensible use is made of boxes round new terms and their meaning. Simple flowcharts and diagrams are used where they help.

The cassette with the pack is probably not essential to your learning. It offers a full disassembler to allow study of other people's programs, a couple of exercises to help you master the rote learning part of binary and hexadecimal numbering systems.

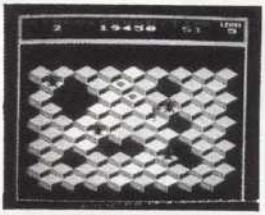
The authors say they tried the book out on a novice who soon let them know where more explanation was needed. The result is excellent, much better than most other introductory books and articles on the subject and very highly recommended.

Dave Watterson

Black bugs

Program *Screwball* **Price** £0.00 **Micro** BBC 32K **Supplier** MRM Software, 17 Cross Coates Road, Grimsby, South Humberside.

Screwball is MRM's latest addition in the *Q-Man, Q-Man's Brother* . . . family of games. Whilst the concept behind these games is one of the more entertaining, and no doubt successful, to date, I imagine that it can't be long before the market for such similar offerings is saturated as the demand for something different grows.



That said, however, I find *Screwball* the most enjoyable and interesting of the trio, not entirely surprising considering that it is a development and direct descendant of the other two.

As with the previous variants, the object of the game is to move the Screwball character about the screen, changing the colour of squares it lands on as it goes, and avoiding the Black Bugs which are in hot pursuit.

Screwball is slightly more complex in that as the game progresses, the screens become more complicated and Screwball's movements are restricted as sections disappear. Similarly, holes which the Screwball frantically drills in order to destroy the Black Bugs can also trap him and lead to his own downfall if he is not careful.

Typically, MRM's use of graphics and sound are both bold and pleasing but originality is somewhat lacking in this offering. You can add one to the 'star rating' if you haven't played a similar game before.

Simon Wilson

Instant squares

Program *Electro Art* **Micro** Electron **Price** £0.00 **Supplier** Quicksilva, Palmerston Park House, 13 Palmerston Road, Southampton.

Any computer program which allows you to draw or paint pictures on screen must be easy to use.

With Quicksilva's *Electro-Art* there are so many facilities or effects available that I had to keep referring to the explanatory booklet as I attempted to draw even a simple picture.

After loading you are asked for the colour of your background and then the colour of your first ink (all sixteen colours of Mode 2). After this, colour changes are very simple, but the string of options available is daunting. You can choose to move invisibly, draw instant squares, rectangles, four different triangles, horizontal or vertical lines, fill in your own shapes, draw/paint true/abstract circles of any size or draw lines in any direction.

Having begun a picture or finished a screen you need to be able to save it to either improve upon at a later date. With Electro-Art couldn't be easier. However, in order to re-load a picture the whole program must first be loaded first. I tried the three free example pictures which are supplied and whilst I found them fascinating — way beyond my capabilities — I was a little impatient at the slowness, not only to load the initial program but also the long wait for the picture to build up on the screen.

Electro-Art is a fascinating program for anyone who wants to try drawing using a computer. It offers every facility to allow you to do this — all that it doesn't provide is the artistic ability that must come from you.

Fred Short

Profit and loss

Program *The Chocolate Factory* **Price** £6.95 **Micro** Dragon **Supplier** Minits, Strand House, Great West Road, Brentford, Middx.

This is a business simulation game for two to six players which should appeal to all those who enjoy trying to outfox their competitors, and has arguably, the added advantage of teaching some basic business finance painlessly. It is aimed at adults and older children. The object of the game is to increase the net worth of your company and to finish ahead of the competition. The game is played in business periods and the number of periods to be played, and thus the length of the game is decided at the start.

Each player starts with a factory with a known capacity and a sum of money. There are a series of decisions to be made within each period. They include number of staff, whether to include extra vans or capacity, how much to manufacture, and the selling price. There is information as to the effect these decisions may have and also a market prediction. Once all players have made their selections and time presses, the results of the simulated trade appear on the screen for each player, in the form of profit and loss account, balance sheet and some comments on the reasons for the results (eg, "you did not have enough vans"). To make the game more difficult various extras can be added, including strikes, heat waves and high inflation.

The only problem with the screen display is that the players' business decisions appear on the screen as they are input. This means that some means has to be devised to keep that data from the other competitors.

For those who like to play stategic games where the object is to out think others and take calculated risks, this has enough variety to hold the interest for quite a while. Since it depends on knowing how the other business will react and outsmarting him (or her), having different options, differing numbers of periods or of course different opponents keeps the challenge going.

Derrick Trueman

Brick lane

Program *Eric and the Floaters* **Micro** 16/48K Spectrum **Price** £5.95 **Supplier** Sinclair Research, Standhope Road, Camberley, Surrey.

It is difficult to know exactly what to say about a game when you have the feeling that, despite several enjoyable hours, you still haven't played it properly. The problem is that Sinclair, in their wisdom, have made sure that *Eric and the Floaters* is only compatible with their own interface. To be blunt, this is selfish and short-sighted. But now to the game.

Hidden below the remains of a ruined civilisation, Eric has chanced upon the dangerous mazes of the Brick Lanes. Armed only with time bombs, Eric must defeat the lane's pulsating guardians, the Floaters, collecting a time bonus, and moving to the next screen, where a greater number of Floaters awaits. The time bombs are short-fused, so Eric must ensure that he gets well out of the way of his own bombs. These explosions will also break down the maze

Although there is only one skill level, the game has twenty stages which will maintain the challenge, no matter how good you get. However, with an uncomfortable choice of control keys, no redefine facility, I didn't do too well. It seems a shame that Sinclair has thus restricted what is otherwise a perfectly good game.

Gordon Sneddon

Balanced learning

Program *Science 1* **Micro** Electron **Price** £0.00 **Supplier** Shards Software, Suite G, Roycraft House, 15 Luton Road, Barking, Essex.

Shard's *Science* for the Electron offers aspects of basic science for 11 to 16 year olds, covering balances, meters and light.

Shard describes its program as fun-to-learn and, if using a comptuer to learn physical concepts is fun, then I would tend to agree. However, I think any attempt to translate the physical world (especially of science) into what is fundamentally an animated text book, runs the risk of adverse criticism. To me, science is to do with apparatus and learning by experimentation with the necessary tools/equipment necessary to prove/disprove a theory.

Having said that, I mut now appear to contradict myselff and state that this collection of programs would be very valuable to a science student who either hasn't grasped the concept during his lesson or who needs very good, well thought out animated revision which he can use alongside the actual apparatus itself.

Each program offers various degrees of complexity both in example and questions about the concept being explained. So for the student who needs to grasp the fundamentals of balances, meters or lenses, this series of programs by Shards is a must.

Fred Short

Lapped

Program *Stock Car* **Price** £7.95 **Micro** BBC B **Supplier** Micro Power, 8/8a Regent Street, Chapel Allerton, Leeds LS7 4PE

This car race game for the BBC is of the type where you are presented with an aerial view of the race circuit, one of the six different circuits which can be selected in *Stock Car*, as opposed to the alternative 'drivers' level view.

The options include choosing the degree of skidding

(0-99%), an interesting enhancement to a relatively standard game. In addition, the player(s) can select whether or not oil patches are present on the track and set the game in the number of laps.

One point in the game's favour is that it does provide one of the relatively limited number of two-player games available; its addition to your software collection may prevent 'non-participant' observers becoming totally bored whilst you (the expert) demonstrate your latest purchase.

As well as the players cars, the computer controls two yellow cars (three in the case of a one player game). Players may use either keyboard or joysticks to steer the car, and move up and down through four games, skill at which is essential in order to maximise acceleration (especially after a crash) and to outmanoeuver the rivals.

The principal deficiency of the game, in my opinion, lies in its relatively unsophisticated graphics content. Better use of sound could have been made, perhaps motor and gear-change noises as opposed to the game's rather unimaginative arcade jingles.

Simon Wilson

First impressions

Program *Photon Disassembler* **Micro** *Spectrum 48K* **Price** *£10.85* **Supplier** *Eigen Software.*

There are now getting on for a dozen assembler/dissembler programs being sold for the Spectrum. Three, in particular, are especially good — *Devpack; Zeus* by Sinclair and the Picturesque package. I use the latter, and am so pleased with it that any new program needs to be really good to make a favourable impression.

Sorry, Eigen, but *Photon* is not excellent.

First impessions are, in my experience, all-important in making one's mind up about something. In this case, my first view of the program was of a very cheaply packaged cassette, with a text book-like manual. I tediously read this, while loading the program to discover what to do next and the leaflet which makes up the manual was of no help, either.

After experimenting (pressing every conceivable combination of keys until something happens!) I found out that pressing the h key tells the computer to expect a hex number. The going was extremely tough but I eventually worked out what to do and after giving it some machine code to disassemble, I thought (hoped?) that I had passed the worst.

But this was not to be. It seems to me that this disassembler does not actually disassemble. It made no attempt to digest my code, anyway. It is of course possible that I was doing something wrong — I certainly don't rule out the possibility. But I followed the instructions, and so I cannot see any customers faring any better than I did.

As there are already three disassemblers on sale which I like, can and do use and all for rather less than the £10.85 asking price for this, I feel compelled to advise you to save your money, and go for the cheaper packages already on sale, which appear to be infinitely better value.

David Lester

Nailbiting tension

Program *Orc Attack* **Micro** Atari **Price** £9.95 **Supplier** Thorn-EMI retail.

Thorn-EMI entered the games software scene some months ago with a wide selection of Atari programs. They featured excellent packaging, but with prices up to £30.00, represented appalling value and consequently didn't sell too well. Some of them have now been repackaged and repriced under a new label — Creative Sparks.

Orc Attack is a good arcade game, and comes as a cartridge. The game mechanics are pretty simple — you control a little Norman-like soldier who has to defend the Castle battlements from the attacks of waves of mean Orcs.

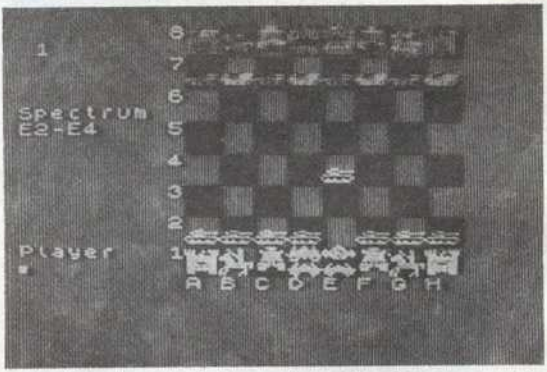
Being Norman, he has the wisdom (sorry, about that!) to have a never-ending supply of various weapons to hand. Rocks, swords and boiling oil may all be pressed into service as the little Orcs rush about with scaling ladders. The game has the right amount of nail-biting tension and mounting complexity. Very addictive, with good sound and graphic graphics — watch the Orcs burning in the oil, or your head tumbling over the battlements!

Tony Bridge

Queen takes pawn

Program *Death Chess 5000* **Micro** 48K Spectrum **Price** £6.95 **Supplier** Artic, Main Street, Brandesburton, Driffield, Yorks Y025 8RL.

Karpov would never believe it. Queen takes Pawn never meant so much. Artic here attempted with *Death Chess* to extend the bounds of traditional chess by making each capture into a



game of arcade fun and wizardry. Well, I did say attempt.

When you decide that P x P looks like a good move the screen display fades (quite nicely) into an alien terrain where your battle tank must run the gauntlet of not very fierce helicopter attacks to reach a distant city. This screen is almost impossible to lose. B x B — escape from a maze filled with vagrant skulls. R x R — dodge falling barrels. And so on and so forth. These screeens are graphically interesting and adept, though extremely low on entertainment value.

And what happens when you get back to the board? Well, in finding that you have lost your Queen to the Spectrum's Pawn which can happen all too easily and often, you realise that to win you must dispense with every piece of chess strategy you ever learnt. For while the computer is still playing chess, logic has left. To win? Just keep advancing pawns, one is bound to get to the King.

Quite simply, the 'chess' is not chess, and if you want good and varied arcade action, then there are better places to find it than here. The program is technically accomplished and impressive, but the effect if rather dull.

Gordon Sneddon

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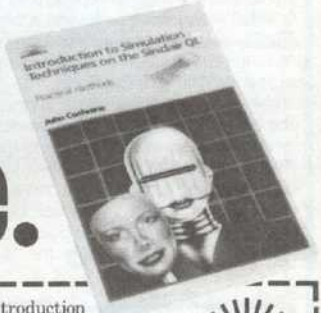

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Key to the puzzle

***Alan Mcdonald** begins a five part series of articles showing how to write machine-code adventure games*

Over the next few issues I shall try to explain how to write a machine-code adventure game for the ZX-Spectrum. Owners of other Z80-based computers may also find the articles of use, in their adventure writing.

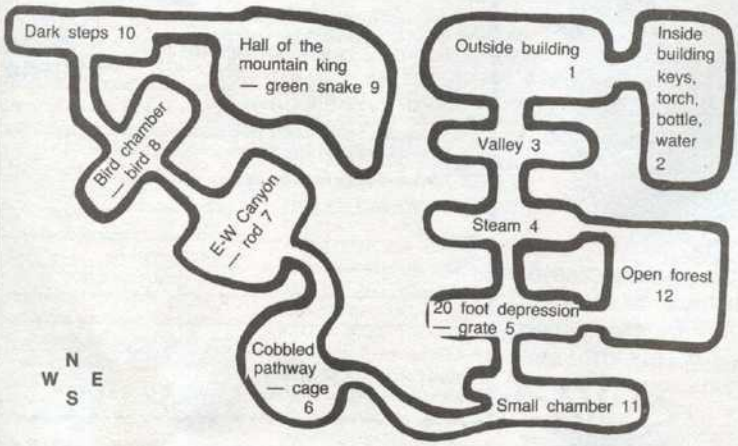
The best way to explain how to write an adventure game is to actually design and code one. If you have some knowledge of Z80 machine code then it will be useful.

We only have five weeks, so it will have to be a small one, but the principles are true for a full-blown adventure.

One of the most famous adventures is *Colossal Caves*. Our 'mini' *PCW* adventure will be based around the first few puzzles found in the adventure.

You start off near a small brick building. Once inside there is a set of rusty keys, a torch, a small pool of water and an empty bottle. The only thing of use in our adventure will be the keys, although you can still fill the bottle and turn on the torch. Eventually you make your way to a grating which is locked — obviously you will unlock it with the keys and then go through. Once inside the caves, you wander around until you find a small wickerwork cage and a black rod. Further on, you come across a singing bird. You must try to catch it, however something is scaring it off. The black rod. You drop the rod and catch the bird. You go deeper into the caves where you find the famous green snake. You release the bird from the cage. The bird kills the snake before flying off. The short adventure ends here, but of course your own adventure can be carried on more or less for as long as you wish.

Here is a map to clarify the layout.



The map shows the positions of the objects in the adventure. Any adventure is just a special type of database and broadly speaking there are three types of data which need to be stored.

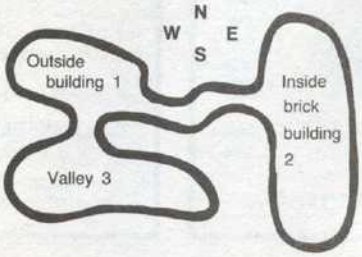
a) Locations — a description of each location plus the direction data — exits and so on.

b) Objects — including their location and movement.

c) Messages — what the adventure tells you.

Locations

Each location allows the player to move to and from it, eg:



Going east from outside the building takes you inside it. Going south, however, takes you to the valley. Notice how each location has a unique number attached to it. The following is a list of all the locations and their numbers:

Number Location

1 You are standing before a huge brick building.
2 You are inside the brick building.
3 You are in a steep sided valley.
4 You are beside a fast flowing stream. The water flows into a 2-inch channel.
5 You are in a 20 foot depression.
6 You are walking on a finely cobbled pathway, leading E-W.
7 You are in towering e-w canyon.
8 You are in The Bird Chamber.
9 You are in The Hallway of the Mountain King.
10 You are on a dark rickety staircase.
11 You are in a small chamber.
12 You are in an open forest.

Therefore locaton 7 is e-w canyon. If we go east from 1 we end up in 2. If we go south from 1 we end up in 3. And so on.

In our adventure there are six possible directions: north, south, east, west, up and down. The computer must have 6 bytes of data, to tell if it is possible to move in a given direction. And if movement is possible then it must know where the player will end up. The 6 bytes of data for Location 1 would be 0,3,2,0,0,0 which tells the computer:

North = 0 Can't go north,
South = 3 End up in the valley (Location 3)
East = 2 End up inside the building (Location 2)
West = 0 Can't go west,
Up = 0 Can't go up,
Down = 0 Can't go down.

This information is stored in memory using the following format: Location, Separator,n,s,e,w,u,d.

The separator is '255' so that the computer knows when it has reached the end of the description.

In Assembler format, Location 1 would be represented by:

```
DEFM "You are standing before a huge brick building", 225,0,3,2,0,0,0
```

The first part of the Location database must start as . . .

```
LOCATE DEFB 255,0,0,0,0,0
label  separator  6 null bytes (n,s,e,u,d.)
```

Take a look at the Assembler listing to see the location database for yourself.

Objects

There are 14 objects shown in the following table.

Number	Object	LOC	EXE
1	Rusty set of keys	2	0
2	Torch which is on	2	3
3	Torch which is off	2	0
4	Empty bottle	2	0
5	Bottle of water	2	3
6	Greenish pool of water	2	2
7	Locked grating	5	2
8	Open grating	5	3
9	Small wicker-work basket	6	0
10	Black rod	7	0
11	Small singing bird	8	2
12	Small bird in wickerwork cage	8	3
13	Vicious green snake	9	2
14	Dead snake	9	3

Notice how two numbers precede each object. The first tells us what location the object is at; eg, the snake is at location 9, and the second tells us if the object does or doesn't exist. The existence codes are as follows: 0 = Object is visible and can be picked up; 1 = the player is carrying the object; 2 = object is visible but can't be taken; 3 = the object does not yet exist, or no longer exists; 4 = the object is being worn. (Not applicable in this adventure).

As an example, in the *PCW* adventure

there is a torch. Two objects are used to represent it — a torch which is on and a torch which is off. Since they both can't exist at the same time one of them is always at Existence 3.

The object data is stored as follows.

```
OBJECT DEFB 255 ; separator.
       DEFM "object".
       DEFB 255 ; separator.
       DEFM "object".
```

and so on.

Take another look at the Assembler listing, to see how all the objects are stored. The existence and location data of each object is stored separately.

Messages

The message table holds a list of words used in the adventure, eg *Ok.., I don't understand, You turn the torch off* are all messages. They are stored in the same way as the objects.

```
MTABLE DEFB 255 ; separator.
       DEFM "message"
       DEFB 255 ; separator.
       DEFM "message"
```

Again refer to the assembler listing.

Like any other program there are variables. If you study the assembler listing carefully you will find a short list of them. The only variables which are important to use at the moment are these:

```
X     DEFB 1    ; location the player is currently at.
NOR   DEFB 0
TSOU  DEFB 0
EAS   DEFB 0
WES   DEFB 0
UP    DEFB 0
DOW   DEFB 0    ;number of objects being carried
INV   DEFB 0    ;locations of objects 14 objects
                 = 14 bytes.
LOC   DEFS 14   ; existence of objects
```

When the program is first run the variables will need to be set up. When a new game is started all of the variables have changed and, therefore we will need to store a permanent copy of the variables somewhere else. Each time the program is started they can then be copied into their correct positions.

```
BUFF DEFB 1,0,0,0,0,0,0,0,0 ; X to INV
     DEFB 2,2,2,2,2,2,5,5,6,7,8,8,9,9, ; LOC
     DEFB 0,3,0,0,3,2,2,3,0,0,2,3,2,3 ; EXE
     (length of buffer = 36)
```

As mentioned earlier the location and existence data for each object is stored separately to make accessing the data easier. Imagine that we want to find out the existence of Object 13 (vicious green snake). We can make HL point to it then store its value into the A register, ie:

```
LD HL, EXE+12        ; HL=the 13th object.
LD A,(HL)            ; store it into A.
```

The A register now holds the existence of the green snake. You may be wondering why it's LD HL,EXE+12 and not 13. This is because we start from 0-EXE+0 = the keys, EXE+1 = the torch which is off, and EXE+12 = the green snake.

This then is the rough form of the *PCW* adventure. Next week we'll deal with printing information to the screen.

```
  10          ORG  55000
  20 ;
  30 ;
  40 ; Setup adventure:
  50 ;
  60 ;
  70 START   LD   HL,BUFF0
  80         LD   DE,X
  90         LD   BC,36
 100         LDIR
 110         LD   A,2
 120         CALL #1601
 130         LD   A,1
 140         LD   (23562),A
 150         JP   PLOC
 160 ;
 170 ;
 180 ;
 190 ; Database and variables:
 200 ;
 210 ; Object database:
 220 ;
 230 OBJECT  DEFB 255
 240         DEFM "A rusty set o
             f keys."
 270         DEFB 255
 280         DEFM "A torch which
              is on."
 290         DEFB 255
 300         DEFM "A torch which
              is off."
 310         DEFB 255
 320         DEFM "An empty bott
             le."
 330         DEFB 255
 340         DEFM "A bottle of w
             ater."
 350         DEFB 255
 360         DEFM "A pool of wat
             er."
 370         DEFB 255
 380         DEFM "A locked grat
             e."
 390         DEFB 255
 400         DEFM "An open grate
             ."
 410         DEFB 255
 420         DEFM "A small wicke
             r cage."
 430         DEFB 255
 440         DEFM "A black rod."
 450
 460         DEFB 255
             DEFM "A small singi
             ng bird."
 470         DEFB 255
 480         DEFM "A small bird
             in a wicker cage."
 490         DEFB 255
 500         DEFM "A vicious gre
             en snake."
 510         DEFB 255
 520         DEFM "A green snake
             ."
 530         DEFB 255
 540 ;
 550 ;
 560 ; Location database:
 570 ;
 580 ;
 590 LOCATE DEFB 255,0,0,0,0,0,0,
             0
 600         DEFM "You are stand
             ing before a large brick b
             uilding."
 610         DEFB 255,0,3,2,0,0,3
 620         DEFM "You are insid
             e the brick      buildin
             g."
 630         DEFB 255,0,0,0,1,0,0
 640         DEFM "You are in a
             large valley."
 650         DEFB 255,1,4,0,0,1,
             4
 660         DEFM "You are besid
             e a stream. The    water f
             lows into a"
 670         DEFM " 2-inch slot.
             "
 680         DEFB 255,3,5,0,0,3,
             5
 690         DEFM "You are in a
             20-foot depression."
 700         DEFB 255,4,0,12,0,4
             ,0
 710         DEFM "You are walki
             ng on a cobbled pathway le
             ading e-w."
 720         DEFB 255,0,0,11,7,0
             ,0
 730         DEFM "You are in a
             large e-w canyon."
 740         DEFB 255,0,0,6,8,0,
             0
 750         DEFM "You are in th
             e bird chamber."
 760         DEFB 255,0,10,7,0,0
             ,10
 770         DEFM "You are in th
             e Hallway of the    Mountai
             n king."
 780         DEFB 255,10,0,8,0,1
             0,0
 790         DEFM "You are on a
             dark staircase."
 800         DEFB 255,0,0,0,0,0,
             9
 810         DEFM "You are in a
             small chamber."
 820         DEFB 255,0,6,0,6,5,
             0
 830         DEFM "You are in an
              open forest."
 840         DEFB 255,0,0,4,12,1
             2,12
 850 ;
 860 ;
 870 ; Message database:
 880 ;
 890 ;
 900 MTABLE  DEFB 255
 910         DEFM "Ok.."
 920         DEFB 255
 930         DEFM "You can't do
             that."
 940         DEFB 255
 950         DEFM "You can also
             see.."
 960         DEFB 255
 970         DEFM "Nothing."
 980         DEFB 255
 990         DEFM "What now ?"
1000         DEFB 255
1010         DEFM "I don't under
             stand."
1020         DEFB 255
1030         DEFM "You can't go
             in that direction."
1040         DEFB 255
1050         DEFM "You can't tak
             e that."
1060         DEFB 255
1070         DEFM "You can't dro
             p that."
1080         DEFB 255
1090         DEFM "You can't car
             ry anymore."
1100         DEFB 255
1110         DEFM "How about ano
             ther game ?"
1120         DEFB 255
1130         DEFM "Press record,
              then hit a key."
1140         DEFB 255
1150         DEFM "Press play, t
             hen hit a key."
1160         DEFB 255
1170         DEFM "You are carri
             ng nothing."
1180         DEFB 255
1190         DEFM "You are carri
             ng.."
1200         DEFB 255
1210         DEFM "With you."
1220         DEFB 255
1230         DEFM "You take.."
1240         DEFB 255
1250         DEFM "You drop.."
1260         DEFB 255
1270         DEFM "You don't hav
             e it."
1280         DEFB 255
1290         DEFM "It's already
             on."
1300         DEFB 255
1310         DEFM "It's already
             off."
1320         DEFB 255
1330         DEFM "You turn the
             torch on."
1340         DEFB 255
1350         DEFM "You turn the
             torch off."
1360         DEFB 255
1370         DEFM "It's already
             full !"
1380         DEFB 255
1390         DEFM "It already is
             ."
1400         DEFB 255
1410         DEFM "How about som
             e keys first !"
1420         DEFB 255
1430         DEFM "It is."
1440         DEFB 255
1450         DEFM "Something is
             scaring the bird."
1460         DEFB 255
1470         DEFM "You catch the
              bird, but it flies off."
1480         DEFB 255
1490         DEFM "You release t
             he bird.  It kills the sna
             ke, "
1500         DEFM "before flying
              off."
1510         DEFB 255
1520 ;
1530 ;
1540 ; Variables:
1550 ;
1560 ;
1570 ROU     DEFB 0
1580 NT      DEFB 0
1590 FLAG    DEFB 0
1600 SYS     DEFB 0
1610 X       DEFB 0
1620 NOR     DEFB 0
1630 SOU     DEFB 0
1640 EAS     DEFB 0
1650 WES     DEFB 0
1660 UP      DEFB 0
1670 DOW     DEFB 0
1680 INV     DEFB 0
1690 LOC     DEFS 14
1700 EXE     DEFS 14
1710 BUFF0   DEFB 1,0,0,0,0,0,0,
             0,2,2,2,2,2,2,5,5,6,7,8,8,
             9,9
1720         DEFB 0,3,0,0,3,2,2,
             3,0,0,2,3,2,3
1730 TEMP    DEFB 0
```

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One file at a time

***Malcolm Bryant** demonstrates a file copy program for the QL*

This program will copy the entire contents of one microdrive cartridge onto another. The *Clone* programs supplied with the QL only copy the Psion software cartridges and are not general-purpose utilities.

The QL manuals specifically recommend that microdrive cartridges are backed-up frequently. This file copy program can prevent the tedious business of typing in a separate *Copy* command for each file on the cartridge. The user has the option of copying the whole cartridge in one operation, or of being prompted by the program for one file at a time.

The file copy program works by sending a directory listing to a special temporary file on the 'destination' microdrive. This file is subsequently read back and the information is used for the copying process. Finally, the temporary file is then deleted and the contents of the 'destination' cartridge are listed on the screen.

Note that the symbols printed in the listing as £ signs should be typed in as hash (#) marks.

```
100 CLS:PRINT"File copy program"
110 PRINT"-----------------"
120 REPeat drv
130 INPUT"Which drive are you copying from? ";d:IF d=1 OR d=2 THEN EXIT drv
140 END REPeat drv
150 s$=d:t$=3-d
160 PRINT"Press ENTER to copy everything or anyother key to copy individual files"
170 e=CODE(INKEY$(-1))
180 PRINT"Accessing microdrive"
190 n$="mdv"&t$&"_temp"
200 OPEN_NEW £5,n$
210 DIR £5,"mdv"&s$&"_"
220 CLOSE £5
230 OPEN £5,n$
240 INPUT £5;a$;a$;
250 REPeat loop
260 INPUT £5;a$;
270 f=10
280 IF NOT e=10 THEN
290 PRINT"Press ENTER to copy file ";a$
300 f=CODE(INKEY$(-1))
310 END IF
320 IF f=10 THEN
330 PRINT"Copying ";a$
340 COPY "mdv"&s$&"_"&a$ TO "mdv"&t$&"_"&a$
350 ELSE
360 PRINT"File ";a$;" not copied"
370 END IF
380 IF EOF(£5) THEN
390 CLOSE £5:DELETE n$
400 DIR "mdv"&t$&"_":EXIT loop
410 END IF
420 END REPeat loop
```

Speed limit

***Peter Whittaker** shows you how to make use of the Dragon Rom's RTS instruction in your own programs*

This week we use the same system as last week to create a *List* formatting routine and a List speed control.

Assembler 4 (or Basic #2) is a *List* formating routine. When a *List*ed program line is longer than 75 characters the start of the second, third and fourth lines are indented by four spaces. This means that the line numbers stand out to the left of the rest of the program, and are subsequently easier to find. To use this on a narrower printer *Poke* the desired line length to location &H7D22. (eg between 10 and 79) Assembler 5 (or Basic #3) is a LIST speed control routine. When enabled, the speed of *List*ing is increased by pressing the *Enter* key, and slowed by pressing the *Clear* key. The list can still be paused by pressing the *Shift* and '@' keys together.

Program Notes

PSHS X,D,CC	The relevant registers are saved. (D=A & B)
PULS X,D,CC	Restore registers so that the computer will carry on undisturbed.
JSR #800F	Sends character in 'A' register to printer.
JSR #8006	Gets character from keyboard into 'A' register.
JSR 37093	Prints from 'X' register +1 until a 0.
JMP 33649	Return to *Basic*.
Location 111	Contains the device number. (0=screen −2=printer)
Location #9C	Contains printer head position.

To save these routines as machinecode *Csavem* "routine", 32000, 32130,359: *Csavem* "vector", 359,361,359. Before reloading *Clear*200, 32000.

ASSEMBLER 4. LLIST FORMAT.

```
                                    X,D,CC
7D01 3417           10010           LDA  111
7D03 B6006F         10010           CMPA  #-2
7D06 81FE           10010           BEQ  @CHKCR
7D08 2707           10010           CMPA  #0
7D0A 8100           10010           BEQ  @SWITCH
7D0C 2728           10010 @RETURN   PULS  X,D,CC
7D0E 3517           10010           RTS
7D10 39             10020 @CHKCR    LDB  @TOGG
7D11 F67D82         10020           CMPB  #0
7D14 C100           10020           BEQ  @RETURN
7D16 27F6           10020           CMPA  #$0D
7D18 810D           10020           BNE  @CHKCOL
7D1A 2602           10020           BRA  @RETURN
7D1C 20F0           10030 @CHKCOL   LDA  $9C
7D1E B6009C         10030           CMPA  #75
7D21 814B           10030           BLO  @RETURN
7D23 25E9           10030           LDA  #13
7D25 860D           10030           JSR  $800F
7D27 BD800F         10030           LDA  #32
7D2A 8620           10030           LDB  #4
7D2C C604           10030 @LOOP     JSR  $800F
7D2E BD800F         10030           DECB
7D31 5A             10030           BNE  @LOOP
7D32 26FA           10030           BRA  @RETURN
7D34 20D8           10040 @SWITCH   PULS  X,D,CC
7D36 3517           10040           PSHS  X,D,CC
7D38 3417           10040           CMPA  #$3
7D3A 8103           10040           BNE  @RETURN
7D3C 26D0           10040           PULS  X,D,CC
7D3E 3517           10040           LDA  @TOGG
7D40 B67D82         10040           CMPA  #0
7D43 8100           10040           BEQ  @SET
7D45 270C           10040           CLR  @TOGG
7D47 7F7D82         10040           LDX  #@TOFF/
7D4A 8E7D79         10040           JSR  37093
7D4D BD90E5         10040           JMP  33649
7D50 7E8371         10040 @SET      INC  @TOGG
7D53 7C7D82         10040           LDX  #@TSET
7D56 8E7D5F         10040           JSR  37093
7D59 BD90E5         10040           JMP  33649
7D5C 7E8371         10050 @TSET     FCC  "
7D5F 204C4C4953542046               LLIST FORMAT ON",0
7D70 204C4C4953542046 10050 @TOFF   FCC  "
7D82 00                             LLIST FORMAT OFF",0
0167                    10050 @TOGG FCB  0
0167 7E7D01             10060       ORG  359
016A                    10060       JMP  @START
10060     PRT           10060       END  @START
10010 @START  PSHS
```

BASIC #2. LLIST FORMAT.

```
10 CLEAR 200,32000
20 FOR A=32001 TO 32130
30 READ B:POKE A,B
40 NEXT A
50 POKE 361,1:POKE 360,125:POKE 359,126
60 STOP
100 DATA 52 , 23 , 182 , 0 , 111 , 129 ,
 254 , 39 , 7 , 129 , 0 , 39 , 40 , 53 ,
 23 , 57 , 246 , 125 , 130 , 193 , 0 , 39
 , 246 , 129 , 13 , 38 , 2 , 32 , 240 ,
182 , 0 , 156 , 129 , 75 , 37 , 233 ,
134 , 13 , 189 , 128 , 15 , 134 , 32 , 4
110 DATA 4 , 189 , 128 , 15 , 90 , 38 ,
250 , 32 , 216 , 53 , 23 , 52 , 23 , 129
 , 93 , 38 , 208 , 53 , 23 , 182 , 125 ,
130 , 129 , 0 , 39 , 12 , 127 , 125 , 1
30 , 142 , 125 , 112 , 189 , 144 , 229 ,
126 , 131 , 113 , 124 , 125 , 130 , 142
 , 125
120 DATA 95 , 189 , 144 , 229 , 126 , 131
 , 113 , 32 , 76 , 76 , 73 , 83 , 84 ,
 32 , 70 , 79 , 82 , 77 , 65 , 84 , 32 , 79
 , 78 , 0 , 32 , 76 , 76 , 73 , 83 , 8
4 , 32 , 70 , 79 , 82 , 77 , 65 , 84 , 32 ,
79 , 70 , 70 , 0 , 0
```

BASIC #3. LIST SPEED CONTROL.

```
10 CLEAR 200,32000
20 FOR A=32001 TO 32130
30 READ B:POKE A,B
40 NEXT A
50 POKE 361,1:POKE 360,125:POKE 359,126
60 STOP
100 DATA 52 , 23 , 246 , 0 , 111 , 193 , 0
 , 38 , 43 , 129 , 93 , 39 , 42 , 182
 , 125 , 130 , 129 , 0 , 39 , 32 , 189 ,
128 , 6 , 129 , 13 , 39 , 6 , 129 , 12 ,
39 , 7 , 32 , 8 , 122 , 125 , 43 , 32 , 3 ,
124 , 125 , 43 , 142 , 11 , 48
110 DATA 48 , 136 , 156 , 140 , 0 , 0 , 38
 , 248 , 53 , 23 , 57 , 53 , 23 , 182
 , 125 , 130 , 129 , 0 , 39 , 12 , 127 , 125
 , 130 , 142 , 125 , 112 , 189 , 144
 , 229 , 126 , 131 , 113 , 124 , 125 , 130 ,
142 , 117 , 48 , 191 , 125 , 43 , 142 , 125
120 DATA 95 , 189 , 144 , 229 , 126 , 131 ,
113 , 32 , 76 , 73 , 83 , 84 , 32 ,
67 , 79 , 78 , 84 , 82 , 79 , 76 , 32 , 79
 , 78 , 0 , 32 , 76 , 73 , 83 , 84 , 3
67 , 79 , 78 , 84 , 82 , 79 , 76 , 32 , 79
 , 70 , 70 , 0 , 0
```

ASSEMBLER 5. LIST SPEED CONTROL.

```
7D01
7D01 3417
7D03 F6006F
7D06 C100
7D08 262B
7D0A 815D
7D0C 272A
7D0E B67D82
7D11 8100
7D13 2720
7D15 BD8006
7D18 810D
7D1A 2706
7D1C 810C
7D1E 2707
7D20 2008
7D22 7A7D2B
7D25 2003
7D27 7C7D2B
7D2A 8E0BB8
7D2D 30889C
7D30 8C0000
7D33 26F8
```

```
7D35 3517
7D37 39
7D38 3517
7D3A B67D82
7D3D 8100
7D3F 270C
7D41 7F7D82
7D44 8E7D70
7D47 BD90E5
7D4A 7E8371
7D4D 7C7D82
7D50 8E7530
7D53 BF7D2B
7D56 8E7D5F
7D59 BD90E5
7D5C 7E8371
7D5F 204C49535420434F
7D70 204C49535420434F
7D82 00
0167
0167 7E7D01
016A
10050      PRT
```

```
10010 @START  PSHS  X,D,CC
10010       LDB   111
10010       CMPB  #0
10010       BNE   @RETURN
10010       CMPA  #93
10010       BEQ   @TOGGLE
10010       LDA   @TOGG
10010       CMPA  #0
10010       BEQ   @RETURN
10010       JSR   $8006
10010       CMPA  #13
10010       BEQ   @FAST
10010       CMPA  #12
10010       BEQ   @SLOW
10010       BRA   @DELAY
10020 @FAST   DEC   @DELAY+1
10020       BRA   @DELAY
10020 @SLOW   INC   @DELAY+1
10020 @DELAY  LDX   #3000
10020 @LOOP1  LEAX  -100,X
10020       CMPX  #0
10020       BNE   @LOOP1
10020 @RETURN  PULS  X,D,CC
```

```
10020       RTS
10030 @TOGGLE  PULS  X,D,CC
10030       LDA   @TOGG
10030       CMPA  #0
10030       BEQ   @SET
10030       CLR   @TOGG
10030       LDX   #@TCLR
10030       JSR   37093
10030       JMP   33649
10030 @SET    INC   @TOGG
10030       LDX   #30000
10030       STX   @DELAY+1
10030       LDX   #@TSET
10030       JSR   37093
10030       JMP   33649
10040 @TSET   FCC   " LIST
        CONTROL ON",0
10040 @TCLR   FCC   " LIST
        CONTROL OFF",0
10040 @TOGG   FCB   0
10050       ORG   359
10050       JMP   @START
10050       END   @START
```


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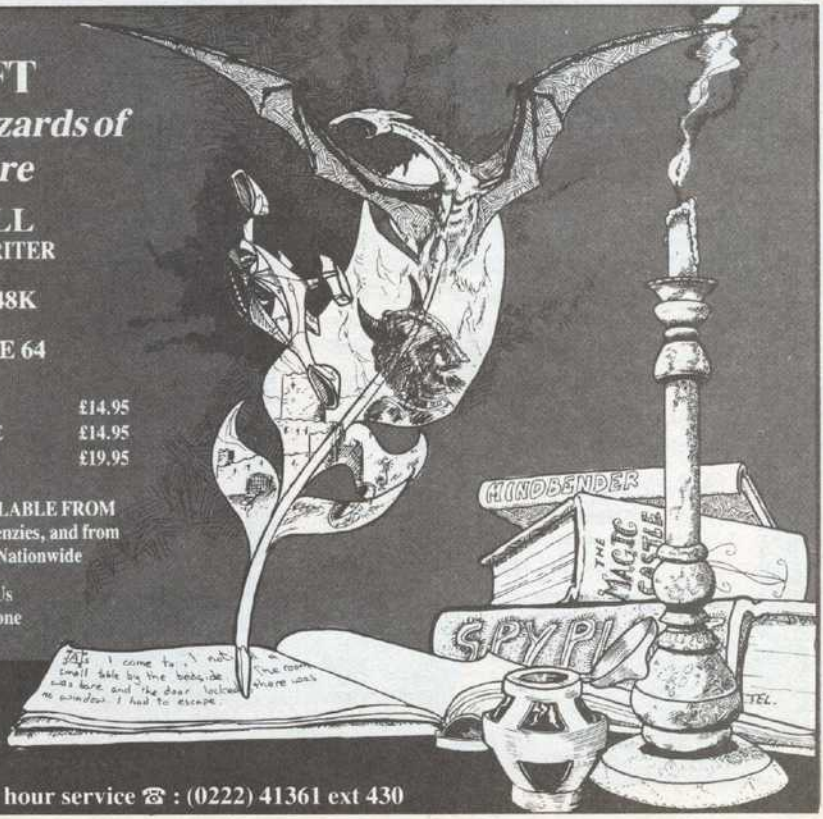

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Searching completed

***Neil Barnes** concludes his multi-purpose facility program*

This is the last part of a file program designed to make use of Mode 7 BBC graphics.

Procedures	Function
PROCmenu	Displays menu on screen
PROCtitle (TS, H)	Prints title in double height TS — text to be printed H — X position of text
PROCdecide	Decides which option has been chosen
PROCnewfile	Allows a new file to be created
PROCgetdata	Inputs data from user
PROCadd	Allows extra items to be added
PROCverify	Allows the file to be verified
PROCdump	Dumps file to printer
PROCsort	Sorts the file
PROCsearch	Searches for an item in file
PROClist	Allows the user to view the file
PROCend	Ends the program

```
2220 DEFPROCsearch
2230 REM Search for the inputted string
2240 PROCtitle("SEARCHING FOR AN ITEM IN FILE",2)
2250 VDU31,0,5,133:PRINT"This option will search for every"
2260 VDU133:PRINT"occurance of the inputted item."
2270 PRINT
2280 VDU134:PRINT"It will also show the item if it is a"
2290 VDU134:PRINT"part of another item."
2300 PRINT
2310 PRINT" e.g.   It will find 'FRED'in 'JOHN FRED SMITH'."
2320 PRINT
2330 VDU131:PRINT"This function is especially useful in"
2340 VDU131:PRINT"conjunction with the other options."
2350 PRINT
2360 VDU134:PRINT"Please input the string you want the"
2370 VDU134:PRINT"computer to search for."
2380 PRINT
2390 VDU31,0,20,129:PRINT"Search string:"
2400 PRINTTAB(15,20)STRING$(25," ")
2410 INPUTTAB(15,20)V$
2420 IF LEN(V$)<1 OR LEN(V$)>15 THEN SOUND1,-15,200,2:GOTO 2390
2430 VDU31,5,22:PRINT"Press SPACE BAR to continue":REPEAT UNTIL GET=32
2440 PROCtitle("SEARCHING FOR AN ITEM IN FILE",2)
2450 VDU31,3,5,134:PRINT"Searching for:";V$
2460 VDU31,10,12,133:PRINT"*** Searching ***"
2470 flag1=0
2480 FOR G=1 TO AI
2490 H$=file$(G)
2500 IF LEN(H$)<LEN(V$) THEN 2550
2510 FOR K=1 TO (LEN(H$)-LEN(V$))
2520 E$=MID$(H$,K,LEN(V$))
2530 IF V$=E$ THEN flag1=1:PRINTTAB(0,15)"Item number";" "G;".";" ";file$(G):PR
INTTAB(5,22)"PRESS SPACE BAR TO CONTINUE":SOUND1,-15,180,1:REPEAT UNTIL GET=32

2540 NEXT K
2550 NEXT G
2560 VDU31,4,12,133:PRINT"*** Searching completed ***"
2570 PRINTTAB(0,15)SPC(40)
2580 SOUND1,-15,200,2
2590 IF flag1=0 THEN PRINTTAB(9,15)"*** NONE FOUND ***":PRINTTAB(5,22)"PRESS SP
ACE BAR TO CONTINUE":REPEAT UNTIL GET=32:PROCmenu
2600 REPEAT UNTILGET=32
2610 PROCmenu
2620 ENDPROC
2630 DEFPROClist
2640 REM List file
2650 PROCtitle("LISTING THE FILE",8)
2660 VDU31,0,5,134:PRINT"This option enables the user to view"
2670 VDU134:PRINT"the file that he/she has created."
2680 PRINT
2690 VDU131:PRINT"Do you want to view the complete"
2700 VDU131:PRINT"file?"
2710 INPUTTAB(6,9)J$
2720 IF J$="Y" OR J$="y" THEN J=1:U=AI:GOTO2810
2730 IF J$="N" OR J$="n" THEN VDU31,0,11,129:PRINT"Which item number do you wan
t to start"
```

```
 2740 VDU129:PRINT"from?"
 2750 INPUTTAB(7,12)J
 2760 IF J<1 OR J>AI OR J=AI THEN SOUND1,-15,220,1:PRINTTAB(7,12)SPC(33):GOTO275
0
 2770 VDU31,0,14,129:PRINT"Which item number do you want to end"
 2780 VDU129:PRINT"at?"
 2790 INPUTTAB(5,15)U
 2800 IF U<1 OR U>AI OR U=J THEN SOUND1,-15,220,1:PRINTTAB(5,15)SPC(35):GOTO2790
 2810 VDU31,4,23,133:PRINT"Press SPACE BAR to view file":REPEAT UNTIL GET=32:PRO
Ctitle("VIEWING THE FILE",7)
 2820 PRINTTAB(5,5)"Press any key after each item"
 2830 FOR R=J TO U
 2840 PRINTTAB(0,8)"Item number";" ";R;" ";file$(R)
 2850 wait=GET
 2860 PRINTTAB(0,8)SPC(40)
 2870 SOUND1,-15,100,1
 2880 NEXT
 2890 PRINTTAB(5,5)"End of file-press any key"SPC(4)
 2900 Q=GET
 2910 PROCmenu
 2920 ENDPROC
 2930 DEFPROCend
 2940 REM End program routine
 2950 PROCtitle("END OF PROGRAM",8)
 2960 INPUTTAB(0,5)"Do you want to leave the program? "D$
 2970 PRINTTAB(33,5)SPC(7):IF LEN(D$)>1 THEN SOUND1,-15,200,2:GOTO2960
 2980 IF D$="Y" OR D$="y" THEN END
 2990 IF D$="N" OR D$="n" THEN RUN
 3000 SOUND1,-15,100,2:GOTO 2960
 3010 ENDPROC
>RUN
```


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Bits and pieces

***Lee Tanner** demonstrates a disassembler for CBM 64 with Simons Basic*

DIS-64 is a disassembler for the Commodore 64 and Simons Basic. There are three commands available:

D To disassemble.
P As for D but also output to printer.
X Exit to Basic.

The D and P commands use the same syntax as the Basic command *List*, eg, D2048 or D-200 or D60000- or D. There must be no spaces between the command letter and the first parameter.

The DATA statements must be typed in exactly as shown as the program uses the *Reset* command.

If you do not have a printer you can save a lot of typing by removing all the code relating to the printer operation, ie, remove every occurance of the code, *If X$="P" THEN PRINT#1*, etc, which occurs in lines 22,26,34,37,40,42,43,44,46,48,50 and 52. Also remove the second statement from Line 54 and remove line 260.

Program notes

10–58 Read code from DATA and print.
80–96 Convert Decimal numbers to Hex.
100–280 Input command and verify.
110 Error message.
260 Open a channel to the printer.
1000–1260 DATA for disassembly.

```
1 REM ************************
2 REM *        DISS-64         *
3 REM * BY LEE TANNER  3/3/84 *
4 REM ************************
5 GOTO100
9 :
10 PROC DISS
20 D=AD:EXEC CONVERT
22 PRINT" ";B$;"  ";:IFX$="P"THENPRINT#1," ";B$;"  ";
24 D=PEEK(AD):RESET INT(D/10)*10+1000
26 READC,C$,B:IFINT(C/10)>INT(D/10)THENPRINT"???":IFX$="P"THENPRINT#1,"???"
27 IFINT(C/10)>>INT(D/10)THEN54
28 IFC=DTHEN32
30 GOTO26
32 D$=RIGHT$(C$,1):IFD$>"0"ANDD$<"9"THENC$=LEFT$(C$,LEN(C$)-1)
34 PRINTC$;:IFX$="P"THENPRINT#1,C$;
35 IFB=1THEN43
36 IFB=2THENAD=AD+1:D=PEEK(AD):EXEC CONVERT
37 IFB=2THENPRINTB$;:IFX$="P"THENPRINT#1,B$;
38 IFB=2THEN43
39 IFB=3THENAD=AD+1:D=PEEK(AD):EXEC CONVERT
40 IFB=3THENPRINTB$;:IFX$="P"THENPRINT#1,B$;
41 IFB=3THENAD=AD+1:D=PEEK(AD):EXEC CONVERT
42 IFB=3THENPRINTB$;:IFX$="P"THENPRINT#1,B$;
43 IFD$="1"THENPRINT",X)":IFX$="P"THENPRINT#1,",X)"
44 IFD$="2"THENPRINT"),Y":IFX$="P"THENPRINT#1,"),Y"
46 IFD$="3"THENPRINT",X":IFX$="P"THENPRINT#1,",X"
48 IFD$="4"THENPRINT",Y":IFX$="P"THENPRINT#1,",Y"
50 IFD$="5"THENPRINT")":IFX$="P"THENPRINT#1,")"
51 IFD$>"0"ANDD$<"6"THEN54
52 PRINT:IFX$="P"THENPRINT#1
54 AD=AD+1:IFAD>T ANDX$="P"THENCLOSE1
56 IFAD>TTHENEND PROC
58 GOTO20
79 :
80 PROC CONVERT
82 X(1)=INT(D/4096):Z=D-X(1)*4096
84 X(2)=INT(Z/256):Z=Z-X(2)*256
86 X(3)=INT(Z/16):X(4)=Z-X(3)*16
88 B$="":Z=1:IFX(1)=0ANDX(2)=0THENZ=3
90 FORY=ZTO4
92 IFX(Y)<10THENB$=B$+CHR$(X(Y)+48):ELSE:B$=B$+CHR$(X(Y)+55)
94 NEXTY
96 END PROC
99 :
100 PRINT"■":GOTO120
110 PRINT"■■COME AGAIN ?■"
120 PRINT"■■";:INPUTW$:X$=LEFT$(W$,1)
130 IFX$="X"THENPRINT"■■":END
140 IFX$<>"D"ANDX$<>"P"THEN110
150 P=2:F$="":T$=""
160 C$=MID$(W$,P,1):IFC$=""THENP=P+1:GOTO200
170 IFC$=""THENT$=F$:GOTO230
180 IFC$<"0"ORC$>"9"THEN110
190 F$=F$+C$:P=P+1:GOTO160
200 C$=MID$(W$,P,1):IFC$=""THEN230
210 IFC$<"0"ORC$>"9"THEN110
220 T$=T$+C$:P=P+1:GOTO200
230 F=VAL(F$):T=VAL(T$):IFT=0THENT=65535
240 IFF<0ORF>65535ORT<0ORT>65535ORT<FTHEN110
250 PRINT"■■";:AD=F
260 IFX$="P"THENOPEN1,4
270 EXEC DISS
280 GOTO120
999 :
1000 DATA0,BRK,1,1,ORA ($1,2,5,ORA $,2,6,ASL $,2,8,PHP,1,9,ORA #$,2
1010 DATA10,ASL A,1,13,ORA $,3,14,ASL $,3,16,BPL #$,2,17,ORA ($2,2
```

continued over the page

```
1020 DATA21,ORA $3,2,22,ASL $3,2,24,CLC,1,25,ORA $4,3,29,ORA $3,3
1030 DATA30,ASL $3,3,32,JSR $,3,33,AND ($1,2,36,BIT $,2,37,AND $,2,38,ROL $,2
1040 DATA40,PLP,1,41,AND #$,2,42,ROL A,1,44,BIT $,3,45,AND $,3,46,ROL $,3
1045 DATA48,BMI #$,2,49,AND ($2,2
1050 DATA53,AND $3,2,54,ROL $3,2,56,SEC,1,57,AND $4,3
1060 DATA61,AND $3,3,62,ROL $3,3,64,RTI,1,65,EOR ($1,2,69,EOR $,2
1070 DATA70,LSR $,2,72,PHA,1,73,EOR #$,2,74,LSR A,1,76,JMP $,3
1075 DATA77,EOR $,3,78,LSR $,3
1080 DATA80,BVC #$,2,81,EOR ($2,2,85,EOR $3,2,86,LSR $3,2
1085 DATA88,CLI,1,89,EOR $4,3
1090 DATA93,EOR $3,3,94,LSR $3,3,96,RTS,1,97,ADC ($1,2
1100 DATA101,ADC $,2,102,ROR $,2,104,PLA,1,105,ADC #$,2
1105 DATA106,ROR A,1,108,JMP ($5,3,109,ADC $,3
1110 DATA110,ROR $,3,112,BVC #$,2,113,ADC ($2,2,117,ADC $3,2,118,ROR $3,2
1120 DATA120,SEI,1,121,ADC $4,3,125,ADC $3,3,126,ROR $3,3,129,STA ($1,2
1130 DATA132,STY $,2,133,STA $,2,134,STX $,2,136,DEY,1,138,TXA,1
1140 DATA140,STY $,3,141,STA $,3,142,STX $,3,144,BCC #$,2,145,STA ($2,2
1145 DATA148,STY $3,2,149,STA $3,2
1150 DATA150,STX $4,2,152,TYA,1,153,STA $4,3,154,TXS,1,157,STA $3,3
1160 DATA160,LDY #$,2,161,LDA ($1,2,162,LDX #$,2,164,LDY $,2,165,LDA $,2
1165 DATA166,LDX $,2,168,TAY,1,169,LDA #$,2
1170 DATA170,TAX,1,172,LDY $,3,173,LDA $,3,174,LDX $,3,176,BCS #$,2
1175 DATA177,LDA ($2,2
1180 DATA180,LDY $3,2,181,LDA $3,2,182,LDX $4,2,184,CLV,1,185,LDA $4,3
1185 DATA186,TSX,1,188,LDY $3,3,189,LDA $3,3
1190 DATA190,LDX $4,3,192,CPY #$,2,193,CMP ($1,2,196,CPY $,2,197,CMP $,2
1195 DATA198,DEC $,2
1200 DATA200,INY,1,201,CMP #$,2,202,DEX,1,204,CPY $,3,205,CMP $,3
1205 DATA206,DEC $,3,208,BNE #$,2,209,CMP ($2,2
1210 DATA213,CMP $3,2,214,DEC $3,2,216,CLD,1,217,CMP $4,3
1220 DATA221,CMP $3,3,222,DEC $3,3,224,CPX #$,2,225,SBC ($1,2,228,CPX $,2
1225 DATA229,SBC $,2
1230 DATA230,INC $,2,232,INX,1,233,SBC #$,2,234,NOP,1,236,CPX $,3,237,SBC $,3
1235 DATA238,INC $,3
1240 DATA240,BEQ #$,2,241,SBC ($2,2,245,SBC $3,2,246,INC $3,2,248,SED,1
1245 DATA249,SBC $4,3
1250 DATA253,SBC $3,3,254,INC $3,3
1260 DATA999,999,999

READY.
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on Commodore 64

This program draws an alarm clock and enables you to set both the time and when you want the alarm to go off. The sound facilities on the Commodore 64 enable a very effective alarm sound to be developed. It wouldn't be difficult to make it ring with any sound you want, eg, Space Invader noises etc.

```
100 REM *********
110 REM **CLOCK**
120 REM ** BY  **
130 REM **F.BUYS**
140 REM ***1984***
150 REM *********
160 G=54272
170 FORT=GTOG+26:POKET,0:NEXT
180 POKEG+24,15:POKE53280,0:POKE53281,0
190 TI$="000000":GOTO700
200 DATA5,28,30,31,156,158,159,0
210 D$(0,0)="┌──┐":D$(1,0)="│  │"
220 D$(2,0)="│  │":D$(3,0)="│  │"
230 D$(4,0)="└──┘":D$(0,1)="  │  "
240 D$(1,1)="  │  ":D$(2,1)="  │  "
250 D$(3,1)="  │  ":D$(4,1)="──┴──"
260 D$(0,2)="┌──┐":D$(1,2)="   │"
270 D$(2,2)="┌──┘":D$(3,2)="│   "
280 D$(4,2)="└──┘":D$(0,3)="┌──┐"
290 D$(1,3)="   │":D$(2,3)="──┤"
300 D$(3,3)="   │":D$(4,3)="└──┘"
310 D$(0,4)="│  │":D$(1,4)="│  │"
320 D$(2,4)="└──┤":D$(3,4)="   │"
330 D$(4,4)="   │":D$(0,5)="┌──┐"
340 D$(1,5)="│  ":D$(2,5)="└──┐"
350 D$(3,5)="   │":D$(4,5)="└──┘"
360 D$(0,6)="┌──┐":D$(1,6)="│  │"
370 D$(2,6)="├──┐":D$(3,6)="│  │"
380 D$(4,6)="└──┘":D$(0,7)="┌──┐"
390 D$(1,7)="   │":D$(2,7)="  ┌┘"
400 D$(3,7)="  │ ":D$(4,7)="  │ "
410 D$(0,8)="┌──┐":D$(1,8)="│  │"
420 D$(2,8)="├──┤":D$(3,8)="│  │"
430 D$(4,8)="└──┘":D$(0,9)="┌──┐"
440 D$(1,9)="│  │":D$(2,9)="└──┘"
450 D$(3,9)="   │":D$(4,9)="└──┘"
460 PRINT"■"
470 GOSUB 630:PRINT"■■"TAB(12)"■ ■"
480 IF A$=TI$THEN480
490 IF LEFT$(A$,4)=LEFT$(TI$,4) THEN
    M=5:Y=28:GOTO 520
500 M=1:Y=0:POKE54277,64:POKE54278,128:
    POKE54276,33:POKE54273,17:
    POKE54272,37:POKE54276,0
510 POKE54277,0:POKE54278,0
520 A$=TI$
530 FOR X=MTO6:PRINT"■" TI$
540 A=ASC(MID$(A$,X,1))-48
550 GOSUB630:PRINT:PRINTTAB(26)"
    ":PRINT:PRINT TAB(26)" ":GOSUB 630
560 FOR E=0TO4
570 PRINTTAB(Y)D$(E,A):NEXT
580 Y=Y+6:IF Y=12 THEN Y=14
590 GOSUB630:PRINT:GOSUB620:PRINT:GOSUB620
600 IFY=26THENY=Y+2
610 NEXT:GOTO480
620 PRINTTAB(26)"■ ■":RETURN
630 PRINT"■■■■■■■■■■■■"
640 IFTI$=AA$THEN930
650 READJJ:IFJJ=0THENRESTORE:GOTO650
660 PRINTCHR$(JJ)
670 IFJJ$=AA$THEN930
680 PRINT"■■"
690 RETURN
700 PRINT"■ CLOCK COMMODORE 64 *** JAN. 1984"
710 PRINT"■■ '1' SET TIME"
720 PRINT"■■ '2' ALARM SET"
730 INPUT"■■■■MAKE YOUR CHOISE";A$
740 IFA$="1"THEN810
750 IFA$="2"THEN900
760 GOTO700
770 PRINT"GIVE TIME IN 6 CHARACTERS":INPUTJJ$
780 IFLEN(JJ$)<>6THEN770
790 TI$="000000"
800 TI$=JJ$
810 PRINT"■■■■"
820 PRINT" GIVE TIME IN 6 CHARACTERS■■"
830 INPUT"TIME";JJ$
840 IFLEN(JJ$)<>6THEN770
850 TI$=JJ$
860 GOTO200
870 PRINT"■"
880 IFJJ$=""THEN700
890 GOTO200
900 PRINT"■■■■ GIVE ALARM TIME IN 6 CHARACTERS'
910 INPUT"■■ ALARM TIME ";AA$
920 GOTO700
930 REM *** SOUND ***
940 BD=53280:SR=BD+1:POKEBD,0:POKESR,0
950 POKE54296,15:POKE54277,9:POKE54284,
 96:POKE54291,9
960 POKE54278,48:POKE54285,48:POKE54292,48
970 POKE54276,17:POKE54288,17:POKE54290,17
980 G(1)=54273:G(2)=54272:G(3)=54280:G(4)=54279
    :G(5)=54287:G(6)=54286
990 FORSL=1TO6:POKEG(SL),0:NEXT
1000 FORCZ=0TO50
1010 DL=INT(RND(1)*255)+1:FORSL=1TO6:POKEG(SL),
     DL:NEXT:POKEBD,DL:POKESR,DL
1020 NEXT:POKEBD,0:POKESR,0:FORSL=1TO6:
     POKEG(SL),0:NEXT
```

Clock
by F Buys

Open Forum

Big Draw

on Spectrum

This program enables young children to draw simple block pictures, patterns, lettering etc, in black on a white ground. A green cursor"*" can be moved around the screen. When "0" is pressed a black square (Graphics Shift 8) is printed at the top left of the cursor. If the cursor is moved on top of the black square it is rubbed out.

If the cursor is moved to the extreme left or right, top or bottom of the screen it will stay there until moved away. If the "0" is pressed when the cursor is at the left or top of the screen the square prints for a fraction of a second to warn you you are on the edge and cannot print at that position. You cannot print at the extreme right or bottom of the screen for obvious reasons. It is best to start your picture at the top left of the screen, but this is not essential as you can replace any squares you have to rub out. It is an exercise in logic, as well as creative ability to use the program well.

If you press "R" then the program is finished and you can enter *RUN* to draw another. You can invent your own games with this program; eg, you can create a maze and starting with the cursor outside, ask your friends to find their way to the centre without rubbing out any black squares.

```
  1Ø PRINT AT 5,11;"BIG DRAW";AT
 8,3;"A PROGRAM FOR YOUNG ARTIST
S";AT 11,4;"An ELLIS DESIGNS PRO
GRAM";AT 13,13;"© 1983"
  2Ø PAUSE 2ØØ: BORDER 5: CLS
  3Ø PRINT AT 1,2;"You can move
a green star by    pressing the
ARROW keys 5,6,7   and 8."
  4Ø PRINT AT 5,2;"If you press
Ø a ■ will be      printed at th
e top left of      the star.";AT
 15,2;"When you are finished pre
ss R."
  5Ø PRINT AT 9,2;"If you move t
he star on to      the ■ it will
 be rubbed out.";AT 12,2;"You ca
n save your picture      on tap
e: ask your dad.";AT 18,8;"Press
 any key": PAUSE Ø: CLS
  6Ø LET a=11: LET b=16
  7Ø GO TO 22Ø
  8Ø PAUSE 2Ø: PRINT AT a,b;" "
  9Ø IF INKEY$="r" THEN GO TO 24
Ø
 1ØØ LET x=a: LET y=b
 11Ø IF x=Ø THEN PRINT AT x-1,y-
1;" "
 12Ø IF y=Ø THEN PRINT AT x-1,y-
1;" "
 13Ø IF INKEY$="Ø" THEN PRINT AT
 x-1,y-1;"■"
 14Ø IF INKEY$="5" THEN LET b=b-
1
 15Ø IF INKEY$="8" THEN LET b=b+
1
 16Ø IF INKEY$="6" THEN LET a=a+
1
 17Ø IF INKEY$="7" THEN LET a=a-
1
 18Ø IF b<Ø THEN LET b=Ø
 19Ø IF b>=31 THEN LET b=31
 2ØØ IF a<Ø THEN LET a=Ø
 21Ø IF a>=21 THEN LET a=21
 22Ø PRINT AT a,b; INK 4;"*"
 23Ø GO TO 8Ø
 24Ø CLS : BORDER 7: PRINT AT 4,
4;"Hope you had fun."
 25Ø PRINT AT 17,2;"Enter RUN to
 draw another      picture."
```

Big Draw
by R Williams

Microradio

GW6JJN

Hi-tech radio

Some of you may have heard the phrase cellular radio and it certainly seems to be the in thing in Hi-tech circles these days.

Cellular radio is the answer to a problem that has been worrying the telecommunications people for years, not least British Telecom. The problem stems from the enormous demand, particularly in the major cities, for mobile personal radio — telephones in cars.

The radio spectrum is already overcrowded and new demands are being made daily for channels for personal use. Under normal conditions, two stations on the same channel will interfere with each other making communication impossible, so each mobile has to use a different channel within a given range. When certain weather conditions prevail, this range can be extended causing even more interference.

As technology advances, people are less and less satisfied with telephones that have wires and need to be plugged into the wall. Trying to use a CB or amateur radio in a big city for local chats is already extremely difficult. Finding an unused and private channel just isn't conceivable.

So the idea of cellular radio was born. The basic idea is to divide each area into a number of small cells, each with a base station of very low power serving that cell. By reducing the area to a cell, the number of channels required is drastically reduced. The channels used in each cell will be different to those in the next cell, so one cell will not interfere with the next. As low power is being used, another cell several miles away can use the same channels over again.

If this system is arranged in groups of seven cells, then the radio spectrum in use can be divided by seven giving each cell in the group exclusive channels. The next group of seven cells will be an exact replica of the adjacent seven and so on.

Now comes the real difficulty. How does a mobile move from one cell to the next and from one group to the next? The answer as always comes back to the computer. Extensive switching networks controlled by microprocessors enable each cell's base station to communicate automatically with the next. Although wire is used to link the bases, it will eventually be done with narrow beam microwave links.

What this means in practice is that anyone either on foot or in a mobile can dial a number using an area code to give an approximate idea of the location of the desired station, and the signal will be transmitted from the relevant base stations until the subscriber is found and has responded.

Several American cities already run successful cellular systems and in Europe there is the Nordic Mobile Telephone system that covers Sweden, Norway, Finland and Denmark with over 20,000 subscribers. Spain, too, has a system in Madrid, as does Tokyo.

A recent report on cellular radio made the confident prediction that in ten years time, no matter where in the world you are, you will be able to reach into your pocket or dial up your wrist radio and talk to anyone you care to call. That is, of course, if they haven't decided on some peace and quiet and left their personal phone at home.

Ray Berry GW6JJN

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share, or topics that you would like to see covered, write to: Ray Berry, Microradio, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Open Forum

Geometric

on Spectrum

This program creates a geometric pattern linked to a tune. You press a number from 1 to 5 — the higher the number the more complex will be the patterns. You can get a copy of the design on a ZX printer if you have one.

```
  1 GO SUB 2000
  5 INK 7: PAPER 1: BORDER 1: C
LS
  8 DIM t(65)
 10 LET a=10: LET b=128: LET c=
88
 20 LET a$=STR$ (INT (4*RND))
 30 IF RND<ra THEN  LET a$=a$+"
+SIN f*SIN f"
 40 IF RND<ra THEN  LET a$=a$+"
+COS f*COS f"
 50 IF RND<ra THEN  LET a$=a$+"
+COS (f*2)"
 60 IF RND<ra THEN  LET a$=a$+"
+SIN (f*2)"
 70 IF RND<ra THEN  LET a$=a$+"
+SIN (f*3)"
 80 IF RND<ra THEN  LET a$=a$+"
+COS (f*3)"
 90 IF RND<ra THEN  LET a$=a$+"
+SIN (f*4)"
100 IF RND<ra THEN  LET a$=a$+"
+COS (f*4)"
110 IF RND<ra THEN  LET a$=a$+"
+SIN f*SIN f*SIN f"
120 IF RND<ra THEN  LET a$=a$+"
+COS f*COS f*COS f"
130 IF RND<ra THEN  LET a$=a$+"
+COS f*COS f*COS f*COS f"
140 IF RND<ra THEN  LET a$=a$+"
+SIN f*SIN f*SIN f*SIN f"
890 IF LEN a$=1 THEN  GO TO 20
900 PRINT a$: PAUSE 100: CLS
1000 REM
1010 FOR f=0 TO PI*2+.1 STEP .1
1020 LET r=a*VAL (a$): LET t(f*1
0+1)=r
1025 REM  IF r<10 THEN  LET r=r+
5*RND
1030 LET x=b+r*SIN f: LET y=c+r*
COS f
1040 IF f=0 THEN  PLOT x,y: GO T
O 1060
1050 DRAW x-PEEK 23677,y-PEEK 23
678
1060 NEXT f
1070 FOR n=1 TO 3: FOR f=1 TO 64

1080 IF INKEY$="" THEN  BEEP (.0
5+.05*RND)*(t(f)<=69),t(f)*(t(f)
<=69) : NEXT f: NEXT n
1090 IF INKEY$="p" THEN  COPY :
LPRINT a$: GO TO 1070
1100 CLS : GO TO 20
2000>PAPER 2: INK 7: BORDER 4 :CLS

2010 PRINT "GEOMETRIC TUNES"

2020 PRINT "(c) RTL 1983": PRINT

2030 REM This program is  avail-
able with many others on the
"Porthtowan Combo Tape" from the
company at West Towan  House,
Porthtowan,  Truro, Cornwall TR4
8AX price £4. (reduced to owners
of issue one as per leaflet).
2040 PRINT "This program generat
es geometricpatterns and plays t
heir tunes.": PRINT
2050 PRINT "After the pattern is
 plotted itstune is played three
  times.  Ifyou press p, then it
  is  copiedon your Sinclair pri
nter,and thetune played again.
  Press  anyother key and the  n
ext  patternis produced."
2060 PRINT : PRINT "Press a numb
er from 1 to 5.  Thehigher numbe
r gives more compli-cated patter
ns.": PRINT
2070 IF INKEY$="" THEN  GO TO 20
70
2080 LET r=CODE (INKEY$)-48: IF
r<1 OR r>5 THEN  GO TO 2070
2090 LET ra=r/10: RETURN
```

Geometric
by J de Rivaz

Arcade Avenue

Infinite loop

More letters arrive on the subject of *Jetset Willy* than anything else and understandably so. Now that the prize from Software Projects has been claimed, I can reveal some of the many pokes that people have sent in.

First of all Mike Smith of Edinburgh sends in the inevitable infinite lines poke — insert line 35 *Poke 358990,0.* However, as you will soon find out, you can get yourself into situations where you lose your lives continually in a sort of infinite loop — so press *Caps Shift* and *Break* to reset. This means that it is still not easy to get around.

Mark Ridgeway of Walsall has sent in this short program that does away with all the monsters and lets you explore the mansion with ease.

```
10 REM **MONSTER ELIMINATE**
20 REM **INFINITE LIVES   **
30 REM **MARK RIDGWAY 1984**
40 PAPER 0: CLS: CLEAR 25000
50 PRINT AT 1,0;INK 7; PAPER
2; BRIGHT 1;"PUT JET-SET TAPE IN"
60 PRINT AT 2,0;INK 7; PAPER 2;
BRIGHT 1;"START TAPE AND PRESS
ANY KEY"
70 PAUSE 0
80 CLS:PRINT AT 2,7; INK 7; PAPER
4; FLASH 1; BRIGHT 1;"LOADING
THE CODE"
90 LOAD""CODE
100 REM **REMOVE CODE**
110 PRINT AT 2,7; INK 7; PAPER 3;
"PLEASE WAIT 2 MINS!"
120 FOR I=41000 TO 49150
122 IF I>41900 AND I<42500
THEN GOTO 128
126 POKE I,0
128 NEXT I
130 REM**INFINITE LIFE**
140 POKE 25892,0
150 BEEP 0.5,0: PRINT AT 2,7;
INK 7; PAPER 2;"TOUCH ANY KEY...
.....": PAUSE 0
160 RANDOMISE USR 33792
```

Simon Walker of Redditch sent in *Poke 37874,00* which means that all the objects are magically collected for you as soon as you enter the room! He also says that *Poke 35114,4* will get rid of the problem about entering the Attic as well as removing some monsters from ten of the rooms (you can find out which for yourselves) and the rope from the Cold room. Unfortunately, the latter does not sound too useful.

Simon then relates a long story about Software Projects failing to include him amongst possible winners, despite several letters and phone calls. Unfortunately, since you confess to having cheated with your pokes I can't really follow this one up for you, Simon. He ends up by suggesting that "Software Projects did not want anyone to win" and this thought is echoed by I Bristow of Chippenham who feels that "the game is impossible without cheating".

Well, having talked to Matthew Smith I am sure nothing so devious was planned — he designed the game to give people a real challenge. To prove it I would like people who finish the game, without cheating, to write in.

Finally this week I have come across a program called *Manic Designer* by P+M Software that allows you to redefine the monsters on the different screens of *Manic Miner.*

If anyone has used this program with great success then please let me know.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to: Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

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Tony Bridge's Adventure Corner

Hero of heroes

This week some more HHOF. Darren Buckley, with 82.5% on his CBM64. Donald Hindmoor: the question you ask about *Pimania*, Donald, will lead you to you completing the adventure, so I won't help you, but it might be worth thinking about the mathematical symbol, PI, and another representation of it. This might give you some idea of the gifts to take into the Caverns of Ivory. Martin Otway, with a score of :2.5% — the Commodore version, Martin, uses this method to denote 102.5%. David Atter and Andrew McNeil with 75%. Steven Patullo, with 76% — Steven got round the annoying habits that Gandalf has by the simple method of shoving him in the chest at the very start! Steven also says that he killed the Dragon himself and thinks that Bard is useless — you are unique, Steven!

Gregg Reid, with a score of 80%. Gregg managed to cleave the hideous Goblin's skull by throwing dead Gollum at him! Mark Nelson, of Tamworth in Staffs. Thanks for you kind remarks, incidentally, Mark, and I hope you enjoy *Ship of Doom* (try melting the ice).

Michael Woodman and Jonathan North with various scores between 82.5% and 97.5%. Christopher Dale with 87.5%. In *Knight's Quest*, try using a bit of force with the steel bar to open the grating — the rope will uncoil itself when the time comes for you to use it.

Andrew Barton, 72.5% on his Spectrum. Andrew mentions the Red, Golden Dragon that I was talking about some weeks ago. Then, I thought that it was unique to the Commodore version, but Andrew tells me that he has come across it on his Spectrum, and a friend with an Oric has also found the bug. Andrew Simia of Edgeware, with 47.5% — not the highest score! In answer to your question about *Ship of Doom*, Andrew, how would you get a drink from a barman in real life? Try climbing on the table in *Golden Apple* in order to reach something interesting — the safe will be useful right at the end of the adventure when you have found all the treasures.

Rosanna Corns, of Enfield, with 105% on her Spectrum (I don't often see such a high score on this machine). Rosanna says "I left Thorin in the Goblin's dungeon, killed no goblins and didn't have the golden key. The trick seems to be to go down on a barrel several times, and also, go through all the doors in all directions. My mother now tries to do the adventure with a minimum score. This can be fun as it involves going down the forest road without the ring! Another good trick is to send the butler down on a barrel and get him to capture first Bard and then the dragon. You can get one to kill the other in the comfort of the dungeon!"

Martin Hagen, 70% with help from Paul Gibbs and brother Russell: "Well, Bilbo didn't do it on his own, did he?! My high score for HHOF is 942 (87 monsters and 6 rings)". R Glover with 60%: Although the side door is not essential to solving the adventure, the way to get into it is by asking Thorin to use Thrain's key (in fact, it's always a good idea, in this, as in many other adventures, to ask other people to do your dirty work). S R Howick of Dunstable, with 95%.

To finish this week — there are some more names to add to the HHOF next week, and some hints'n'tips — I'm going to quote at length a letter from Paul Duffield, which will give an idea of the way in which *The Hobbit* plays. This may be of use to those of you who may be undecided about buying this great adventure (and also, incidentally, shows how important reading the book can be!).

"As a dedicated Tolkien fan (I've read just about everything he's written, and *The Lord of the Rings* at least 30 times!), I was familiar with the characters and locations — the Trolls gave me some trouble, though; in the book, they catch you, and Gandalf helps you to escape. After a few low-percentage deaths the solution dawned on me and I went to Rivendell, suitably kitted out with sword and rope.

"My knowledge of the book suggested that capture by the goblins was the next step, and after a rest for some food at Bearn's House, this was quite easily accomplished. Escape from the goblins required some thought, even with the benefit of the clue provided, but eventually I got through the window. I was stuck here for some time, and I think this is the most frustrating part of the adventure, due to the goblins (are there really only five?) taking so much pleasure in cleaving skulls. Having died, and re-started several times, I was near to a nervous breakdown, which wasn't helped by the Wood Elf!

"After a pleasant chat with Gollum, I persuaded the Wood Elf to incarcerate me in his dungeon. I think the clue here gives too much away, and I was soon riding the Barrel to Long Lake. Bard was most co-operative, if not talkative, and I soon had the treasure, and a dead dragon. Wondering how to get home, I wandered about a bit in the vicinity of the Lonely Mountain. A few trips to and from Laketown later, I was at the Waterfall. The spiders got me in the forest, and I died with a score of 87.5%. [There follows an account of Paul's voyages around the middle earth]. Eventually, I got Elrond to help me with the treasure and I was soon back at Rivendell with a large inventory and a score of :0.0% (?100%).

"Not being able to enter my Hobbithole, because it was too full, was a little perturbing; I had visions of the place being ransacked by the Sackille Baggins!

"I suppose it's nice to be Hero of Heroes etc, but I was disappointed to have completed what is a truly superb adventure — do other adventurers feel the same way?

"Anyway, there it is. I now await Melbourne House's next offering, although I expect to find it more difficult as I'm not a fan of Sherlock Holmes. Is anyone working on a *Lord of the Rings* adventure, or wouldn't it fit into 48K?"

As far as I know, Paul, Tolkien's publisher's will not allow a computer version of the great work — it would probably be in three or four separate parts, a la *Wrath of Magra*, but we will be very lucky to ever see it, I'm afraid.

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This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So, if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further write to: Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

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Peek & Poke

Smooth graphics

A Carrington of Solihull writes:

Q I would like to know how smooth graphics are created in machine code on the ZX Spectrum. I think that this is an issue that has eluded many programmers as none I know are able to help me. Perhaps an article on the subject would be in order.

A Machine code graphics on the Spectrum, or indeed any other machine, would make a good subject for a series of articles in any maganzine. However, I think that you would find a book *Supercharge your Spectrum*, published by Melbourne House, very useful. It deals with a number of routines for controlling screen output (scrolling, partial clearing, etc).

The big advantage of such a book is that it gives you a base from which you can build your own library of graphic routines.

CP/M on loan

David Brown of Whitby, North Yorkshire writes:

Q I have recently upgraded my computer to run CP/M software and remember reading somewhere recently of an organisation which loaned out or gave away CP/M programs. Can you help with an address or contact?

A I'm afraid not. I have not come across such a benevolent organisation, and I must confess that I would be surprised if one existed. The problems associated with lending or giving away CP/M software, much of which is licensed for use only on a specific computer are very great. However, if any of you out there know differently please let me know.

Information transfer

Scott McFarlane of Edinburgh writes:

Q Could you please tell me something about the Micro-myte acoustic modem. I know it is cheaper than the Prism, but can I get on to Prestel or Micronet with it and is it prone to interference as I have heard?

A The Micro-myte is a software controlled acoustically-coupled modem aimed specifically at Spectrum owners. It uses the cassette port rather than the more standard RS232C serial interface.

It can't be used to communicate with Prestel or Micronet, or indeed any of the numerous bulletin boards. It can, however, be used to allow quick and easy transfer of information between Spectrums. It transfers data at a rate of 1032 baud rather than the more normal 300 baud.

All acoustic modems are prone to interference of one sort or another, from CB radio to bad telephone lines. The Micro-myte is no worse in this respect than any other acoustic modem.

Suitable conversion

Kit Waters of Camberley, Surrey writes:

Q After reading from many sources how the Dragon 32 and Tandy machines are basically similar, I decided to try a few Tandy programs on my Dragon 32.

The result was not altogether a surprise; similar they might be, equal they are not. The main problem I am having is finding a suitable conversion for *DEF INT* and *DEF DBL*; can you help?

A *DEF INT* and *DEF DBL* set up special types of variable. The first established an Integer variable (no decimal places) and the second an integer variable of double length (8 bytes). Normal numeric variables will be OK for this purpose as long as you remember to keep removing the fractional parts of any calculations (using *INT* or *CINT*).

There is a book *Hot programs to feed your Dragon & Tandy Colour Computer* which sounds right up your street. It contains a large number of programs, including a Tandy to Dragon converter (and vice versa). The book costs £6.95 and is published by Sigma Technical Press.

Not complete

Malcolm Irving of Houghton-le-spring, Tyne and Wear writes:

Q I have a Vic 20 and will soon be getting a 64K Ram pack. Do you know if I would be able to play CBM64 games on it and if I would be able to use CBM64 cartridges on my Vic if I had a 64K Rampack and a motherboard.

A As the CBM64 and the Vic 20 are not compatible I am afraid the answer to all your questions is a definite no.

Even with a 64K rampack, you will not be able to use any CBM64 software of any type on your machine because the operating systems and memory maps for the two machines are different.

Bulletin service

W I C Mitchell of South Shields, Tyne and Wear writes:

Q I own a 16K ZX81 and printer and I would like to access *Viewdata*. Is this possible with my machine? Apparently, Maplins offer a suitable 300 baud modem. Could you give me some more information about it please? Also, what 300 baud services are available?

A It is not currently possible to access Viewdata with your machine I'm afraid. Although the Maplins modem is suitable for the ZX81, it runs at 300 baud and not the 1200 required for *Viewdata* type systems.

The Maplins modem uses a standard serial RS232C interface to the computer (also supplied by Maplins). The device is supplied in kit-form and is a very cheap way into the communications area. 300 baud services are typically of the bulletin-board type and these are usually free. There are a number of such services in the UK and overseas.

Sord programs

E Wookey of South Yardley, Birmingham writes:

Q Is there any way of converting programs written for the Spectrum, BBC etc for use on the Sord M5? I have seen plenty of books concerning other micros, but nothing on the Sord. What I want is a book called something like *Understanding your Sord M5* — do either you or your readers know of a book such as this.

A Firstly, converting programs written for the Spectrum or the BBC to run on the Sord will be no easy matter.

Basic programs will be bad enough because of the differences in dialect from machine to machine and machine-code programs will be virtually impossible to convert, because of the different memory mapping of the various machines.

You may be able to convert some smaller Basic programs, but I would not attempt anything too big without all the necessary manuals.

I'm afraid I have not come across the book you want which is suprising as all the other popular micros have at least one like that.

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VIC SPEECH synth £16, Mother-board + 8K, £25, C2N £22, RS2323 interface £8, 3K £9, monitor £16, all software half price. Phone 0472 78058 weekends. Including postage and package.

VIC 20, cassette deck, 16K switchable Ram, Joystick, also many taped games, cartridges and books plus magazines. Buyer must collect. £180 ono. Hartlepool (0429) 71982 (after 6pm).

VIC 20, 16K, cassette deck, 3 cartridges, lots of software, Kempston joystick, many magazines, etc. AS new, only £120.00 ono. Tel: Basingstoke 781206.

CBM 64 4 months old + C2N cassette unit. Introduction to Basic parts I + II. Programmers reference guide, Mastering the 64. CBM 64 machine code master + other books and mags. Worth £350. Sell for £250 ono. Tel: Kings Lynn (0553) 66266 ext. 719 after 4pm.

VIC 20 + cassette recorder + intro basic part I + £40 of s/w + joystick + mags. Still under guarantee. Bargains at £80. Tel Northampton (0604) 404590.

VIC-20 SOFTWARE for sale or swap. Crazy Kong, Catcha Snatcha and Wacky Waiters. All £3. All best sellers, ask for Peter between 5-9pm on Stamford (0780) 51138.

VIC-20 complete starter pack, boxed, swtichable 16K, Joystick, Chess, Book, Superscreen (Forty Column), Laserzone, Victape issues one to three, little use, excellent condition, guaranteed till end August £140. D. Leese 26 Laurel Grove, Rising Brook, Stafford. ST17 9EF.

SWAP ARCADIA for Metagalatic, Battle of the Llamas at Edge of Time. Also want 16K expansion for VIC under £20. Timothy Aikens, 29 Lonsdale Road, Bournemouth, Dorset BH3 7LY.

CBM 64, micro soft Assembler Cartridge Forth Cartridge, manuals, + books, £150. Colin 01-941 0305. eves.

VIC-20 C2N cassette deck, Quickshot II, Joystick and 1520 printer/plotter. (printer 1 month old) vgc. £200 ono. Tel: Hertford 59425 after 5.30pm.

16K VIC 20 switchable Ram Pack 3K, 8K and 16K, intro to Basic part I 3 cartridges, load of s/w. inc. Jetpack + Crazy Kong. New style cassette deck, books + mags £170. Tel: 65064 St Albans.

COMMODORE 64 plus £60 of extras £225 ono. Tel: Farnham 72361 after 6pm.

COMMODORE 64 C2N cassette 1541 disk drive, Joystick, cover, manuals, reference guide, 4 games, hardly used £500. New, Sell for £350. Write to Stuart, 11 Corporation Road, Newport, Gwent, S. Wales.

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VIC 20 excellent condition with games, cartridges, many mags and books. Gart, Super Expander, Joystick + cassetter recorder. Intro to Basic I + II £200 ono. Tel: John 0946 4106 after 6pm.

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VIC 20 + TAPE deck. No extras. Office hours. 01-363 5353 Ex 2444 (Neil).

VIC 20 S/W sell £1 to £9.00 16K switchable Ram + Joystick for sale. Or the lot £80.00. Tel: 01-837 7763.

CBM 64 — Simons Basic + books, any offers. Tel: 01-881 2525.

VIC 20 still boxed, cassette unit, Joystick 16K expansion, 6 cartridges 30 s/w. Will sell everything for £150 or swap for 48K Spectrum. Readleton 43531.

VIC 20 Super Expander, Omega Race, Star Battle Cartridges. Plus Myriad, Skramble, Asteroids tapes. Joystick. Any offers to Paul Foster, 115 Bedale Court, Gateshead, Tyne & Weat. NE9 7AZ.

SELLING VIC 20 with 7 cartridges and 9 cassettes + Joystick. Going for £180 ono. Tel: Airdrie 61010 and ask for Alan between 4.30pm and 7.00pm.

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COMMODORE 64 address book and mailing labels program uses tape or disk £5. Also word processor on plug in ROM cartridge £25. Phone: 0491 39497.

VIC 20 Motherboard. Lots of software inc 6 cartridges. No cassette drive so only £75 ono. Phone: 01-859 6724 evenings

VIC 20 OWNERS! For sale: "Avenger" cartridge only £4. Swap: "Pirate Cove" for "Mission Impossible". Also wanted: Audiogenics Forth, Rabbits "Myriad", creative spark's/Thorn EMI's "Computer War" and Audiogenic's "Grandmaster". Tel: 0558 822509.

Acorns for sale

BBC SOFTWARE for sale including Colditz adventure, Arrow of Death, Valley, Wizard, Space Fighter, also many mags like Acorn User, HCWK, etc. Write to K. L. Chan, 9 Cornmarket, Thame, Oxon, OX9 3DX.

BBC ICON. Hobbit tape system, 7 tapes. (1400K capacity). 700K of s/w £125.00. Tel: 01-573 5590 after 4.30pm.

BBC MODEL B 1.2 OS with disk drive wanted for £250 cash. Phone 01-670 9147 after 7pm.

BBC zaalger, fortress, killer gorrilla, freefall, tango, hobbit, 737, Doctor Who, danger UXB, Android Attack, Missile Control, Music Process, Phone Derv 697 2295 after 5pm

BBC Mode A 32K zenith green, screen monitor. Ferguson cassette recorder, joystick, leads, lot of programs. mags etc vgc £250 Tel: Uxbridge 0895 3887 eves

BBC B 6 months old. Some games £350. No offers. VIC 20 + cartridge cassette + S/W + 16K ram pack £150. Tel: 0760 33837

BBC B computer disc drive. Watford disc interface. First offer over £550. Mike Tel: 01-602 0277 eves

BBC B boxed as new 12 O/S with cover. Cassette recorder, all leads. Quickshot joystick I + II with interface. £70 of S/W. BBC mags. £390 ono Tel: 01-794 7079 eves

BBC model 3 fitted with Acorn DFS sideways expansion board, wordwise graphics rom. Toolkit rom £450. Also 40 track disc drive £150. Tel: 0245 81878 eves

BBC B nearly new. Cover, £50 of S/W, magazines, cassette recorder. Quickshot joystick £380. For everything. Tel: 01-794 7079 eves

ADVENTURE HELPLINE

Mysterious Adventures Circus on Spectrum. Where is the cable? How do you get on the road? How do you open the maintenance wagon? And where is the petrol? M. Hutchinson, 21 Greenwood Terrace, Barnsley, S. Yorks.

The Hobbit on Spectrum. How can I open the trap door in the Goblin's Dungeon? And how can I get the ring to become invisible and where? Michael Wasian, Babengauserst 200, D-4800 Bielefeld 1, West Germany.

COMPUTER SWAP COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD or telephone 01-437 4343.

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It cannot be swapped.

Warning: It is illegal to advertise pirated software.

Please write your copy in capital letters on the lines below.

Name.....

Address.....

.....

Telephone.....

Adventureland on Vic 20. How do you examine the thing in the lava and how do you get the Royal Honey? Daved Bailey, 146 Newmarket Road, Bulwell, Nottingham.

The Hobbit on Spectrum. I can't get in a barrel at the Elvinkings cellars. Pale bulbous eyes keep killing me and I keep getting stuck in the mountains. Chris Colbeck, Bain House, Mulberry Carth, Thorp Arch, Wetherby, Yorks LS23 7AF.

Adventure 1 on ZX81. I can't open the door or move the boat. D. J. Lay, 91 Allport Lane, Bromborough, Wirral, Merseyside. 051 334 9696.

The Hobbit on C64. How do you get to the spider's web and what are the commands for opening the side door. Gavin McAlinden, 12 Woodville Avenue, Lough Road, Lurgan, Co Armagh, N. Ireland.

Knight's Quest on Spectrum. How do I use the boat and how do I gain access to whatever lies beyond the open panel? P. Ruddick, Tree Tops, Pinewood Road, Sands, High Wycombe, Bucks.

Colditz on Spectrum. How do I get off the window ledge — (I have the rope)? How do I stop the floor creaking? How do I get out of the sewer pipe? B. Matthews, 144 Westerleigh Road, Dowend, Bristol BS16 6HT.

Adventure C Ship of Doom on Spectrum. I cannot open the door once I have put the key into it. Peter Jakubske, 476 Liddesdale Road, Glasgow G22 TBX.

Lords of Time on Spectrum. I cannot get past the door in the caveman zone (Inventions Room). Also, how do you get through the maze (Time Zone 6)? Martin Harris, 151 Dawlish Drive, Seven Kings, Ilford, Essex. 01 597 5110.

Inca Curse on ZX81. I cannot find the gold at all! Simon Ward, 29 Dinthill, Hollinswood, Telford, Shropshire, TF3 2DT.

Voodoo Castle on Vic 20. How do you restore the JuJu man back into the Stand? Anthony Bailey, 146 Newmarket Road, Bulwell, Nottingham.

Dungeon Adventure on BBC. How do I deal with the Black Sphere? What should I do about the boat or the Zombie. A. R. Michael, 33 St Cross Road, Winchester, Hants SO23 9JA.

Lost City on BBC. How do I get out of the valley? N. Chounan, 59 Frederick Road, Leicester.

Diary

What Micro? Computer Show	Battersea Park London	July 14-15 10.00am-7.00pm	£1.50	VNU Business Publications Evelyn House 62 Oxford Street London W1A 2HG 01-636 6890
Electron and BBC Micro User Show	Alexandra Palace London	July 19-21 10.00am-6.00pm July 22 10.00am-4.00pm	£3.00 adults £2.00 children	Database Publications 68 Chester Road Hazel Grove, Stockport 061-456 8383
Sinclair Computer Users Exhibiton	Essex Exhibition Centre Moulsham Street Chelmsford Essex	July 21 10.00am-6.00pm	50p adults 30p children	Essex Exhibition Centre Moulsham Street Chelmsford 0245 25900
Scottish Personal Computer World Show	Assembly Halls George Street Edinburgh	July 26-27 9.30am-8.00pm July 28 9.30am-5.00pm	£1.50 adults £1.00 children	Scottish Industrial and Trade Exhibitions 8a Charlotte Square Edinburgh EH2 4DR 031-225 5486
2nd Official Acorn User Exhibition	Olypia 2 Hammersmith Road London	Aug 16 (trade day) Aug 17-19	£2.00 adults in advance £3.00 and £2.00 on door	Small Enterprises 20, Orange Street London WC2H 7ED

commodore

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BIGGER AND BIGGER

Alice in Videoland is a program for the Commodore 64 that had people gasping in disbelief at the graphics and sound when demo versions of it were shown by Audiogenic at shows last year.

The program is now available and is essentially four arcade games linked together by theme and the fact that success in earlier sections affects your performance later on. Even playing very badly, though, it is possible to play each section.

Because of the size of the game new sections have to be loaded in from disc — no tape version of the game is available. The first, and most frequently viewed section is not part of the game at all but a title screen where Alice, in a forest setting, follows a bouncing rabbit to the site of a rabbit hole to the accompaniment of a specially composed music and the swooping of birds. It's spectacular except for the rotten 64 scrolling which means the top of the screen moves faster than the bottom (slow processing time).

The game proper begins as Alice decends down the rabbit hole and finds a variety of mysterious objects which she must catch in her basket, which itself must be caught, as she floats down — cakes, bottles, keys, etc.

In part one, section two Alice can use the things she has collected — keys unlock doors and bottles and cakes make her smaller and bigger. The more Alice has collected, the wider area she will be able to explore and the more points will be gained.

The second section has Alice by the magic mushroom and Cheshire cat — she must jump up to catch bread and butterflies and rocking horse flies — the latter turn into balls and are used in part four. Alice is made bigger and smaller by eating different sorts of mushrooms.

Section three involves a chess board, a jabberwocky, and Tweedledum and Tweedledee, two knights and Alice. You have to use the Knights to help Alice across the chessboard. The final part has Alice playing croquet with a flamingo — she has to hit balls with it bouncing them against a bush and a fence through a card soldier hoop — the balls earned in part two help her up her score.

There is a continuous musical soundtrack which is cleverly arranged and suitably demented (like a ten year old Jean-Michel Jarre) and you are unlikely to find much better graphics on any other 64 game. My feeling, though, is that although the games are not awful to play — they are not tremendous either. At £12.95 it is reasonable value for money.

Program	*Alice in Videoland*
Price	*£12.95*
Micro	*Commodore 64 (+ Disc)*
Supplier	*Audiogenic PO Box 88 Reading Berks*

GIANT CAMELS

There being so little of it, I feel duty bound to mention some independent Atari software and it comes from Llamasoft. Jeff Minter has converted *Attack of the Mutant Camels* — his CBM 64 meisterwork — for the Atari machines.

For those not familiar with Jeff Minter's style, giant camels threaten to overrun the earth by spitting laser. You

have to blast away at them in your tiny spacecraft and save all humanity.

Using sundry machine code cleverness, you actually see the beasts plodding relentlessly across the landscape (all 10 screens of it). Aside from the game being great fun, it's also cheap at £7.50 (by Atari standards, that's under half price).

Program	*Attack of the Mutant Camels*
Price	*£7.50*
Micro	*Atari (any machine)*
Supplier	*Llamasoft 49 Mount Pleasant Tadley, Hants*

EXCELLENT GRAPHICS

The Hulk is a graphics adventure from Adventure International based on the popular comic book character and written by Scott Adams. Versions are available for several machines but the company are particularly proud of the Spectrum version which they say has 'the best graphics ever seen in an adventure game' — the BBC edition, incidently, doesn't have any graphics at all.

Rising to such bait I inspected the Spectrum version closely — actually I think the graphics *are* excellent and certainly as good as the *Hobbit* with an authentic real comic book flavour, although they only fill a third, as opposed to two thirds, of the screen.

Of the adventure itself, one must be more circumspect — it only understands two word commands 'take this' 'drop that' etc which is fairly primitive by present Spectrum standards; on the other hand coming as it does from the twisted mind of Scott Adams, the clues are fantastically challenging.

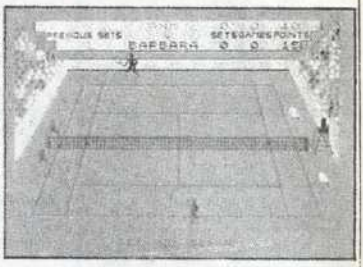
The opening page has you as Dr Bruce Banner tied to a chair and trapped. The general gist of solving the situation is not hard to grasp: 'become the hulk' but how? — the solution was discovered via a jokey suggestion in the *Popular* office — sneerers were horrified to see the screen change and the Hulk appear. The suggestion? Now that would be telling.

Program *The Hulk*

Pick of the week

SERVE AND VOLLEY

Match Point is the latest game from Psion who have otherwise all but left the Spectrum software market. The timing for release is, of course, impeccable and so is the game.



Quite simply you play tennis moving a little man left and right, towards the net and away from it — you can play against the computer or another player.

Obviously when you reduce a game as complex as tennis to up, down, left, right fire (well, swing bat to be exact) you're going to lose something — but less than you'd think. The movement of the ball has been arranged with astonishing precision; you can radically affect the kind of return by how close you are to the net or whether your return is forehand or backhand.

There are a vast number of game permutations: one or two player, keyboard joystick, keyboard control keys and whether you're playing quarter finals, semi finals or finals — this latter set being the skill level effectively. The graphics are wondrous, complete with ball boys who run on to get the ball if it goes into the net.

Program	*Match Point*
Price	*£6.95*
Micro	*Spectrum*
Supplier	*Sinclair Research Stanhope Road Camberley Surrey GU15 3BR*

Price	£9.95 (other versions different prices)
Micro	*Spectrum*
Supplier	*Adventure International 119 Bright Street Birmingham B1 1BE*

PLANNING AND LOGIC

You cannot have failed to notice that we at *Popular* think pretty highly of *The Quill* — what it meant, apart from anything else was that it became possible for people with good imaginations and no programming skill to create complex machine code text adventures. Recent months have seen the release of dozens of good text adventures using the system.

Now Gilsoft have adapted the system for the Commodore 64 which is in even more dire need of good text adventures than the Spectrum was. The system works in the same way as on the Spectrum, although obviously there is a bit more memory to play around with and greater scope for sound manipulation.

What *The Quill* does demand is some planning and logical thought. Using a variety of menus, you tell the system what the rooms are, ie, what description is in each and how the rooms are connected. You then have to decide what objects are where and arrange the 'flags'. These are a means of determining if an object is present or if an action has been taken and thus provide the means to constructing the basic conundrums that are the whole basis of adventures.

The program enables you to 'run through' a program with diagnostics — a screen display of the state of the flags, etc, to check that the game works as you intended it to. The program comes with an extensive manual that explains it all pretty well, but as I say it needs some work on the adventure designer's part. Highly recommended.

Program	*The Quill*
Price	*£14.95*
Micro	*Commodore 64*
Supplier	*Gilsoft 30 Hawthorn Road Barry South Glamorgan CS6 8LE*

BULLS EYE

In *Dartz* Automata gives that well known sport beloved of enormously fat Northern men its own treatment. Not content with providing a pretty fair computer impersonation of the game, extras are provided in the form of pints of beer supplied by obliging fans which steadily affect your aim.

Basic idea is to stop a cursor which is moving around a dartboard. When it comes to the number you require then stop another cursor which pin points the exact section you require — treble, double, bull etc.

There are a variety of different games available: 1 or 2 players, 501, etc and technically the game is one of Automata's best in quite a while with good sound and graphics (particularly the little darts player who represents 'you' and throws the darts and drinks the pints.

Program	*Dartz*
Price	*£5*
Micro	*Automata 70 Highland Road Portsmouth Hants PO49 DA*

HYSTERICAL

Hercules is an exceedingly strange Miner style game for Commodore 64 based loosely on the trials of Hercules. Over 50 screens you have to find your way to various different objectives — this involves moving Hercules (who still has his hair I'm glad to say) in the classic left, right, jump, across ledges, podiums, ropes and other things.

What makes the game different is that in many cases there is no obvious way to get where you want to go, although you know it can be done — the solution often involves a risky leap into mid air, occasionally a step may appear. Another problem is that if you spend too much time pondering your next move, the platform you're standing on is very likely to burst into flames.

I was hooked; the graphics are nice and the music effects wonderfully hysterical (loud and shrieking). I expect the game to do well — particularly since the company putting it out are backed by Island records who are planning a TV campaign to promote it. There are claims that the game is better than *Manic Miner* — I'm not sure about that but Miner fans will certainly enjoy it.

Program	*Hercules*
Price	*£6.95*
Micro	*Commodore 64*
Supplier	*Interdisc 249-251 Kensal Road London W10 5DB*

SPRITE CREATION

White Lightning may, at first, seem like another 'design games' utility for the Spectrum but, in fact, it is radically different from previous offerings.

White Lightning is essentially two things: a Forth program and a sprite program which have been designed to work, not only together but under interrupt control; ie, one routine carries on happily at 50 times a second oblivious to the conventional execution of another section of program.

Whilst the basic White Lightning language is essentially Forth, you can run programs from Basic if you want whilst you get familiar with Forth syntax.

The sprite creation is very sophisticated — sprites can be larger than a screen and up to 255 sprites can be used at the same time. Priorities can be given and the usual kinds of collision detection are allowed for.

As you might expect, there is a pretty vast manual of over

130 pages which explains how the whole thing works, as well as a demo program. This is certainly not a program for the beginner, but for those prepared to spend time with it. I suspect the possibilities could be endless.

Program	*White Lightning*
Price	*£14.95*
Micro	*Spectrum*
Supplier	*Oasis Software Alexandra Parade Weston-Super-Mare Avon BS23 1QT*

New Releases is designed to let people know what software is coming on to the market. If you have a new game or utility which you are about to release send a copy and accompanying details to: New Releases, Popular Computing Weekly, 12-13 Little Newport Street, WC2R 3LD.

Top 10

ZX81

1	(–)	Chess 2	(Artic)
2	(–)	ZX Dissembler	(Bug Byte)
3	(–)	Machine coder 1	(PSS)
4	(7)	Krypton Ordeal	(Novus)
5	(6)	Walk the Plank	(Novus)
6	(3)	Alien Rain	(CRL)
7	(9)	Black Crystal	(Carnell)
8	(10)	Planet Raider	(Novus)
9	(–)	Machine Coder 2	(PSS)
10	(–)	Sabotage	(Psion)

(Figures compiled by Boots/Websters)

Vic 20

1	(–)	Omega Race	(Commodore)
2	(–)	Cactus	(Audiogenic)
3	(–)	Mastermind	(Commodore)
4	(–)	Quizmaster	(Commodore)
5	(–)	Laser Zone	(Leisuresoft)
6	(–)	Escape MCP	(Rabbit)
7	(–)	Traxx	(Leisuresoft)
8	(–)	R. Carrier Family Menu Planner	(Commodore)
9	(–)	Mangrove	(Audiogenic)
10	(–)	Dam Buster	(Rabbit)

(Figures compiled by Boots/Websters)

Commodore 64

1	(–)	Hover Bovver	(Leisuresoft)
2	(–)	Laserzone 64	(Leisuresoft)
3	(–)	Matrix	(Leisuresoft)
4	(–)	Lazarin	(Leisuresoft)
5	(–)	Biology	(Commodore)
6	(7)	Pinball Wizard	(Commodore)
7	(–)	Chuckie Egg	(A&F)
8	(–)	Hektik	(Mastertronic)
9	(–)	Superpipeline	(Tasket)
10	(–)	Hunchmania	(Mastertronic)

(Figures compiled by Boots/Websters)

Dragon 32

1	(–)	Champion	(P'soft)
2	(–)	Advanced Basic Tutor	(Ampalsoft)
3	(–)	Dragon Trek	(Salamander)
4	(–)	Basic Tutorial	(Ampalsoft)
5	(–)	Database	(MST)
6	(–)	Night Flight	(Salamander)
7	(6)	Area Radar Controller	(SFA)
8	(–)	Maths Level 2	(Ampalsoft)
9	(7)	Golf	(Salamander)
10	(5)	Star Jammer	(Salamander)

(Figures compiled by Boots/Websters)

Atari

1	(1)	Incredible Hulk	(Adventure International)
2	(–)	Bruce Lee	(Datasoft)‡
3	(2)	Slinky	(Cosmi)
4	(8)	Rally Speedway	(Adventure International)*
5	(–)	The Caverns of Kafka	(Cosmi)
6	(4)	Zaxxon	(Datasoft)
7	(4)	Airstrike II	(English)
8	(7)	Encounter	(Movagen)†
9	(3)	Saga 5 The Count	(Adventure International)‡
10	(–)	Captain Sticky's Gold	(English)

* Cartridge ‡ 48K Disc † 32K Disc

(Figures compiled by Calisto Computers 021 632 6458)

BBC*

1	(2)	Pengi	(Visions)
2	(3)	Aviator	(Acornsoft)
3	(4)	JCB Digger	(Acornsoft)
4	(7)	Overdrive	(Superiorsoft)
5	(9)	1984	(Visions)
6	(2)	Fortress	(Pace)
7	(5)	Blagger	(Alligator)
8	(6)	Eagles Wing	(Invasion)
9	(–)	Spitfire	(Alligata)
10	(–)	Dam Busters	(Alligata)

* All model B

(Figures compiled by Micro Management 0473 59181)

Spectrum

1	(3)	Jet Set Willy	(Software Projects)
2	(8)	Jack and the Beanstalk	(Thor)
3	(–)	Zaxxon	(Starzone)
4	(6)	Psytron	(Beyond)
5	(2)	Fighter Pilot	(Digital Integration)
6	(1)	Sabre Wulf	(Ultimate)
7	(5)	Trashman	(New Generation)
8	(4)	Blue Thunder	(Foundry Systems)
9	(–)	Match Point	(Psion)
10	(7)	Mugsy	(Melbourne House)

(Figures compiled by W H Smith and Son, London)

Books

1	(7)	Creepy Computer Games	(Usborne)
2	(–)	Space Games	(Usborne)
3	(–)	Educational Directory	(PJR)
4	(–)	Ideas for Micro uses	(Ladybird)
5	(–)	Micros are Fun	(Ladybird)
6	(–)	Micro Knowledge	(Ladybird)
7	(–)	Understanding Computer Graphics	(Usborne)
8	(–)	Projects and Programs	(Ladybird)
9	(–)	Choosing and Using a Micro	(Fontana)
10	(–)	Penguin Computing book	(Penguin)

(Figures compiled by Bookwise)

Book Ends

PROVERBIAL

The Art of Computer Conversation describes itself as a book about making computers 'people literate' in contrast to the idea of making people 'computer literate'.

A quick description of the book could be that it is about 'interacting with computers' but that doesn't capture its vast scope — it turns out that the issues involved in 'interacting with computers' range over an enormous field, much of it having almost nothing to do with computers at all.

Rather than summerise the whole book in a few paragraphs, here's a quick list of topics covered: conversation, adventure games, interactive novels, expert systems, record players, experts, user expectations, Hal, robots, personality, Alan Turing, graphics, icons, Shrdlu, marketing, training, manuals, Eliza, and morality.

All the major points are covered in a series of proverbs — in fact, the whole thing is written in a sort of irreverent, everything is pretty cosmic, hey, wow style, that, if it borders on the pretentious, also makes the book much easier to read. I liked it a lot.

Book *The Art of Computer Conversation*
Price *£6.95*
Micro *General*
Supplier *Prentice/Hall 66 Wood Lane End Hemel Hempstead Herts HP2 4RG*

SOUND & VISION

Melbourne House's *Commodore 64 Sound and Graphics* is not so much about sound and graphics as a series of fairly complex machine code routines to enable you to make better use of the sound and graphics. It is, if you like, an upmarket listings book.

That said, the notes that surround the listings that form the chapters of the book are thorough, if technical and some of the listings are very useful indeed. There are programs here for various kinds of scrolling, different character sets, music creation and so on, mostly written in code for speed and efficiency. There are even a couple of games illustrating the sound and graphic techniques.

Book *Commodore 64 Sound and Graphics*
Price *£6.95*
Micro *Commodore 64*
Supplier *Melbourne House Castle Yard House Castle Yard Richmond TW10 6TF*

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Laser Reflex	Arc	BBC	**£7.95**	Talent
Superfruit	S	BBC	**£5.95**	Simonsoft
Zeta 7	Arc	Commodore 64	**£7.95**	Mogul
West	Ad	Commodore 64	**£9.95**	Talent
Archipelago	Arc	Commodore 64	**£7.95**	Talent
House of Usher	Arc	Commodore 64	**£6.95**	Anirog
Murphy	Arc	Commodore 64	**£7.95**	Mogul
Kalah	S	Commodore 64	**£7.95**	Talent
Busicalc	Ut	Commodore 64	**£75.00**	Supesoft
Panarama	Ut	Commodore 64	**£17.95**	Talent
Zeus Assembler	Ut	Commodore 64	**£9.95**	Crystal
QL Utilities	Ut	QL	**£10.00**	WD Software
Quest for the Garden	Ad	Spectrum	**£6.99**	Pheonix
Code Book Caper	Ad	Spectrum	**£1.99**	Scorpio
Decor Wreckers	Arc	Spectrum	**£1.99**	Scorpio
Sand Scorchers	Arc	Spectrum	**£5.95**	Unique
Star Searcher	Arc	Spectrum	**£1.99**	Scorpio
Stickman Olympics	Arc	Spectrum	**£5.50**	Avalon
Adventure Playground	Ed	Spectrum	**£7.95**	Widgit
Castle of Dreams	Ed	Spectrum	**£7.95**	Widgit
Mastermind	Ed	Spectrum	**£4.00**	Silas
Ball by Ball	S	Spectrum	**£5.95**	Video
Day of The Match	S	Spectrum	**£5.95**	Video
Dix Miller	S	Spectrum	**£2.99**	CCS
Fruit Machine	S	Spectrum	**£4.95**	NCH
Micro Olympics	S	Spectrum	**£5.95**	Database
Reichswald	S	Spectrum	**£5.50**	MW
Whodunnit	S	Spectrum	**£2.99**	CCS
Microdrive Utility	Ut	Spectrum	**£4.50**	Easyuse
Simspeech	Ut	Spectrum	**£5.95**	Sim
Tomb of Myclops	Ad	Texas T199/4a	**£6.95**	Scorpio
Minefield	Arc	Texas T199/4a	**£5.95**	Scorpio
The Wreck	Ad	ZX81	**£3.95**	J Paton
Battlestar	Arc	ZX81	**£2.50**	J Paton
Windfall Willy	Arc	ZX81	**£2.50**	J Paton
Physics Ohms	Ed	ZX81	**£3.95**	J Paton

Key: Ad — adventure/**Arc** — arcade/**Ed** — education/
S — strategy-simulation/**Ut** — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to: This Week, Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD.

Thinking Logo

At the end of education there has been no improvement in the thinking ability of children — in fact there has actually been a deterioration (Edward de Bono in *Children Solve Problems).*

With television programmes about his techniques for learning how to think, and the *de Bono Thinking Course* being used by companies of many shapes and sizes, Edward de Bono is almost an establishment representative of radical approaches to the learning of thinking.

De Bono comments that in a survey of inventive people the only uniform characteristic was their use of drawings and sketches in their thinking.

Furthermore, he notes that young children are not always very good at expressing their ideas in words, but they can often communicate clearly through drawing.

The emphasis on the visual as a means of helping in learning to think suggests a similarity between the de Bono approach, and that associated with Seymour Papert (through use of Logo).

The most immediate impact of Logo is its use of Turtle Graphics, which is highly visual. And the main objective of Logo is to assist in the learning of how to think.

There are, however, important differences between Papert's approach and that of De Bono.

De Bono seems to be arguing that the possession of knowledge is far less important than an ability to think. 'Thinking' should be part of the curriculum, alongside more conventional subjects. The use of visual methods of learning, and in thinking, is to be highly recommended.

And that to learn how to think one needs to follow a structured course of study, so that people can learn from each other — if situations are unstructured then people will be working on projects so varied that the likelihood of learning from others is diminished.

Papert's approach is different. He also believes that education does not teach people how to think, but neither does he think that 'studying' how to think is the answer.

His computer language Logo is designed not just to help children teach themselves basic rules of thinking and problem solving, but also to assist in the learning of basic knowledge skills of numeracy and literacy — the limits to Logo are set by the individual.

Both Papert and de Bono agree on the importance of the visual in the enhancement of the learning process. But, whereas de Bono concentrates on diagrammatic forms of representation, Logo provides an extremely flexible visual device for exploring mathematics and the world of words.

De Bono separates thinking from knowledge, and assumes a curriculum, whereas the whole ideal of Logo is that the child constructs its own curriculum, with support from the teacher as necessary. A Logo system on a home computer helps the child learn, without a teacher or a curriculum.

Whereas de Bono sees the teaching of thinking as 'teaching', following a structured course/curriculum — with every person following a similar course, Papert sees the child as directing its own study, and learning from others through discussing the many different results of self-direction.

Logo is also admirably suited to collaborative enterprises, to experimentation. In Logo, errors are not mistakes, they are opportunities to improve one's understanding.

The de Bono style of presentation of thinking has been very successful, but it is less radical than the approach embodied in Logo.

And there are good reasons to believe that, of the two, Logo is the more comprehensive and useful approach.

Boris Allan

Leave it to Hackit

Puzzle No 115

Hackit proved to be a very popular piece of software. No longer do you need to actually write programs — *Hackit* does it all for you.

That is, it's a program to write the program to run the computer!

All you do is feed in the features that you wish to use and leave the rest to the program. It's quite reasonably priced, too, at somewhere between five and ten quid, and I understand that over the last couple of years since it went on sale, the demand has been such that the copies are snapped up as soon as they reach the shops. To date, total sales have reached the grand total of one hundred and sixty thousand pounds and one penny!

The weekly production rate has been constant since the program went on sale. Can you say

```
> 10 PRINT "PRO
GRAM"
  20 GOTO 10
  30 REM CLONE!
```

how many have been produced each week, how many weeks they have been on sale, and the price of each copy?

Solution to Puzzle No 110

The program calculates all possible totals obtainable with different combinations of the coins (with at least one of each denomination present), and then scans the array to determine which values are obtainable in twenty-eight ways.

```
10 DIM AMT (190) 20 FOR B = 1 to 5 30 FOR C = 1 to 5
40 FOR D = 1 to 5 50 FOR E = 1 to 5 60 FOR F = 1 TO 5
70 LET T = 1 * B + 2 * C + 5 * D + 10 * E + 20 * F 80 LET
AMT(T) = AMT(T) + 1 90 NEXT F 100 NEXT E 110
NEXT D 120 NEXT C 130 NEXT B 140 FOR N = 1 TO
190 150 IF AMT(N) = 28 THEN PRINT N 160 NEXT N
```

This gives two results 85 and 143, but, as the total must be a multiple of five, the correct total cost was 85 pence and each ice-cream was 17 pence.

Winner of Puzzle No 110

The winner is: John Harrison, Chapel Lane, Long Marston, Tring, who receives £10.

Rules

If the puzzle can be sensibly solved using a computer then the winner will have included a listing of the program used to find the correct answer. The closing date for entries to Puzzle No 115 is July 27.

The Hackers

.... but seriously,

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pi-monthly magazine etc. Annual Subscription £5 ☐ U.K. £7 ☐ overseas

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END NOTE FROM THE BOYS AT AUTOMATA: "'PIROMANIA" WILL BE IN YOUR SHOPS(OR SOME OF THEM) SOON - WE'LL LET YOU KNOW WHEN!' LAST WORD (AS USUAL) FROM THE PIMAN: 'MRS THATCHER CAN'T MOAN - MR GRIFFIN GAVE MY WHOLE BODY A SQUINT!' 'SHUTUP, I LIKED IT!' - EVANS